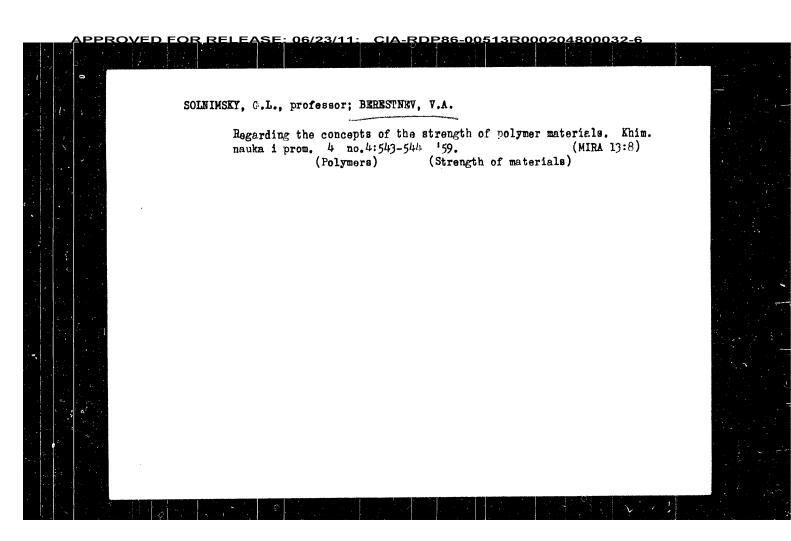
\$/183/59/000/06/015/027 15(4) Berestnev, V. A., Gatovskaya, T.V., B004/8007 AUTHORS: Kargin, V. Kes Yaminekaya, Ye. Ya. The Mechanism of the Patigue of Pibers TITLE: Khimicheskiy volckna, 1959, Nr 6, pp 50 + 52 (USSE) PERIODICAL: The authors proceed from the experimentally proven fact ABSTRACT; that the destruction of fibers by fatigue is caused by macrodefects/ (Refs 5-8), which develop in the course of the fatigue tests in the fiber. In the present paper they endeavor to give a mathematical description of this process as a function  $n=f\left(\aleph_{\nu}v\right)$  ( n=number of stress changes leading to fatigue failure. No number of occurring defects, was rate of the increase of defects). In consideration of the duration of stress, the intensity of the frequency of stress changes, and the length of the specimen to be tested, the subbors obtain the equation (9), the correctness of which they prove for various limiting cases and which they compare with the results obtained by 2.7 Mosov (Fig.) (8.7 11 Mosy mention Card 1/2



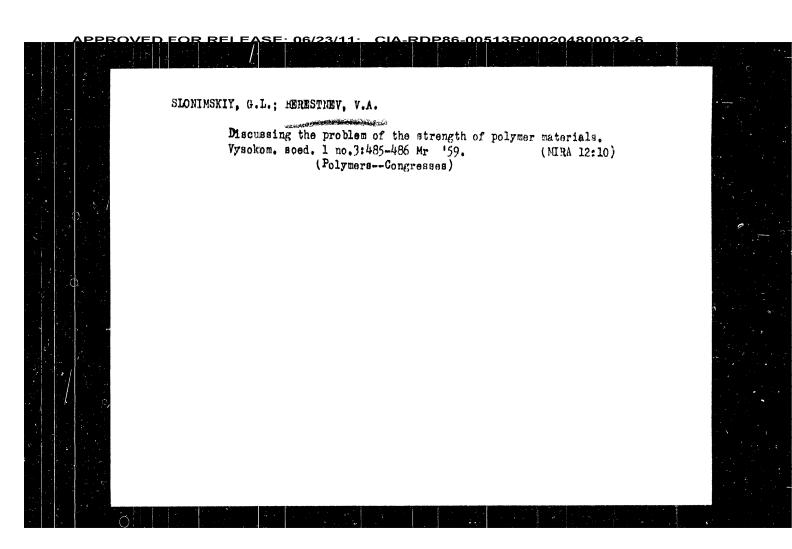
ORIOVA, A.V.; BERESTNEV, V.A.; KARGIN, V.A.

Disintegration of fibers due to mechanical action. Vysokom.soed.

l no.5:740-742 My '59.

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

(Taxtile fibers, Synthetic)



BERESTNEY, V.A.; GATOVSKAYA, T.V.; KARGIN, V.A.; YANINSKAYA, Ye.Ya.

Study of the physicochemical properties of cord fibers. Part 3:
Some changes in the structure of fibers occurring in repeated cyclic stretching. Vysokom. soed. 1 no.3:373-377 Mr '59.

(MIRA 12:10)

1.Fiziko-khimicheskiy institut im. L.Ya. Karpova i Nauchnoissledovatel'skiy institut shinnoy promyshlennosti.

(Nylon-Testing)

Study of the physicochemical properties of cord fibers.

Part 2: Effect of thermal and mechanical action on the sorption properties of capron cord. Vysokom. soed. 1 no.3:337-341 Mr '59.

(MIRA 12:10)

1.Fiziko-khimicheskiy institut in. L.Ya. Karpova i Nauchnoissledovatel'skiy institut shinnoy promyshlennosti.

(Nylon)

. On the Mechanism of Fiber Failure

SOV/20-122-4-36/57

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute imeni L. Ya. Karpov)

Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire-Industry)

SUEMITTED: June 24, 1958

Card 4/4

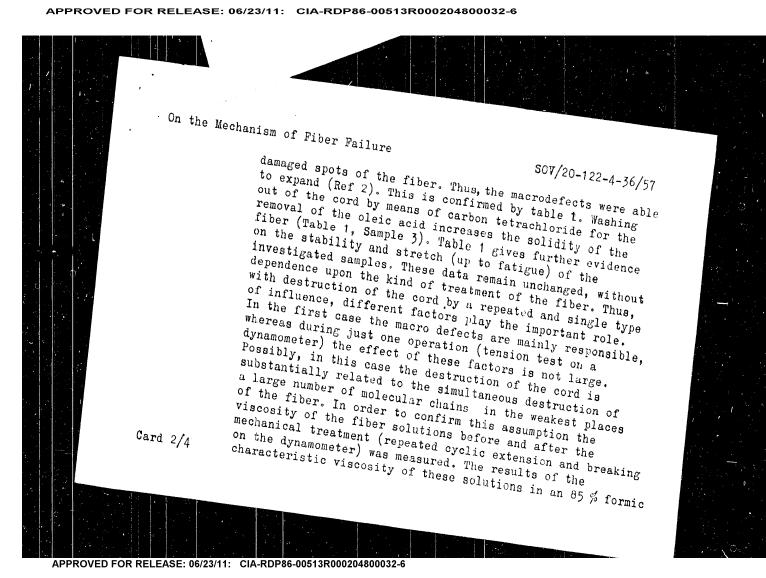
PROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800032-6

On the Mechanism of Fiber Failure

SOV/20-122-4-36/57

acid solution are given in table 2. It is seen from this that the decrease in viscosity of solutions from fibers, which have been torn on the dynamometer, is considerably higher than with a repeated extension. During fatigue the viscosity value falls somewhat in the initial period and then remains stable even at breaking. Inversely, at breaking on the dynamometer the specific viscosity is maintained up to the destruction of the fiber. At the time and on the site of breaking only, it drops rapidly. Therefore, it might be supposed that the destruction of a fiber in consequence of repeated mechanical influence is due to the continuous development of macrodefects at depth. During this, only a few chains are broken in a small cross section; during a single extension, the breaking of a considerable number of molecular chains in a weak part of the fiber determines the destruction of the fiber. There are 2 tables and 2 references, 2 of which are Soviet.

Card 3/4



Studies of the Physical-Chemical Properties of Cord Fibers. 1. The Heat
Effects of Dissolution of Capron Fibers

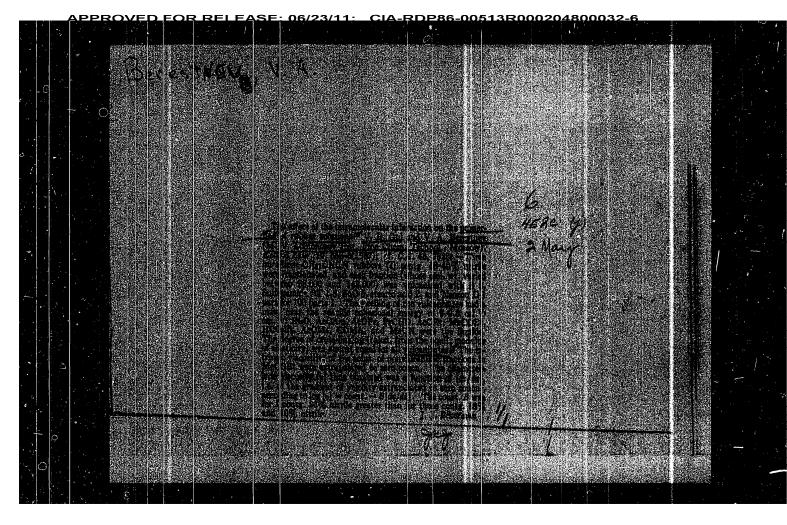
ASSOCIATIONS: Fiziko-khimicheskiy institut imeni L.Ya. Karpova (Institute of
Physics and Chemistry .meni L.Ya. Karpov). Nauchno.issledovatel'skiy institut shinnoy promyshlennosti, Noskva (Scientific Research Institute of the Tire Industry, Moscow)

SUBMITTED: October 5, 1957

1. Capron fibers--Physical properties 2. Capron fibers--Chemical
properties 3. Capron fibers--Test methods 4. Capron fibers
--Temperature factors

Card 2/2

sov/69-20-6-3/15 Berestnev, V.A., Gatovskaya, T.V., Kargin, V.n., Yaminskaya, AUTHORS: Ye. Ya. Studies of the Physical-Chemical Properties of Cord Fibers TITLE: (Izucheniye fiziko-khimicheskikh svoystv kordnykh volokon). 1. The Heat Effects of Dissolution of Capron Fibers (Teplovyye effekty rastvoreniya kapronovogo volokna) Kolloidnyy zhurnal, 1958, Vol 20. Nr 6, pp 694-696 (USSR) PERIODICAL: The microstructure of cord fibers and their changes have been ABSTRACT: investigated by thermodynamical methods. The table shows that the decrease in heat effects during heating in water is different for stretched and unstretched specimens. The difference is 0.77 kcal/g or 25% of the total heat effect. The dissolution heat decreases sharply during heating of capron fibers in formic acid which is explained by an increase in crystallinity of the polymer. Repeated stretching has no effect on the heat of dissolution. The dissolution heat of a rolled specimen is 24.5% higher than in initial specimens. Cord fatigue is due to macrodefects in the fiber. There is 1 set of photos, 1 table, and 4 Soviet references: Card 1/2



L 17818-63 ACCESSION NRI LPM04949 8/0108/63/018/008/0031/0035 AUTHOR: Akchur n. J. A. Berestney, P. D. TITLE: Tunnel-diode superregenerative amplifier SOURCE: Radiotekhnika, v. 18, no. 8, 1963, 31-35 TOPIC TAGS: tunnel dode, amplifier, superregenerative amplifier, quenchingfrequency oscillator ABSTRACT: Using turnel diodes instead of translators permits operating a small-size high-gain amplifier at temperatures up to 300 C. A quenchingfrequency oscillator and a regenerator designed with tunnel diodes are considered theoretically. Six calculated parameters, including quenching voltage, signal-circuit voltage, and equivalent capacitance, show good agreement with experimental results (table supplied). Orig. art. has: 4 figures, 22 formulas, and I table. Card 1/2/

SOV/103-13-2-5/15
Conditions for Oscillation and Frequency of Oscillations of Junction-type

With transformer-feedback and a generator with capacitative feedback are derived and the same or almost the same equations as for the generator with autotransformer-feedback are obtained. There are 5 figures, and 6 references, 4 of which are Soviet.

SUBMITTED: May 29, 1957

Card 3/3

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800032-6

SOV/108-13-2-5/15 Conditions for Oscillation and Frequency of Oscillations of Junction-type Triode Transistor Oscillators

> input resistance of the triode has a finite value. The value of n, with a minus sign before the root is of interest for practice. - Going on to the problem of the frequency of produced oscillations git is referred to the fact that the self--oscillation frequency in the moment of self-excitation is meant by it, that is under consideration of the phase displacement in the triode at low signals but without consideration of the frequency correction at the expense of the nonlinearity of the system. Starting from equation (4) the formula with two values for the frequency of the produced oscillations is derived. Two values are obtained, because the inductive three-point according to its nature is a two-circuit system. This equation (18) shows that the frequency of the produced oscillations approximates the resonance frequency of the oscillation circuit, if the expression in square brackets is equal to one. For this case equation (23) is obtained. This equation shows that together with the increase of the self--oscillation frequency the quantity of the capacity C, must decrease, which also corresponds to the idea in physics of the activity of the phase-displacing circuit in the autotransformer scheme. In a similar way the formulae for a generator

Card 2/3

SOV/108-13-2-5/15-AUTHOR: Berestney, P. D. Conditions for Oscillation and Frequency of Oscillations of TITLE: Junction-type Triode Transistor Oscillators (Usloviya samovozhbuzhdeniya i chastota avtokolebaniy generatorov na ploskostnykh poluprovodnikovykh triodakh) PERIODICAL: Radiotekhnika, 1958, Vol. 13, Nr 2, pp. 36 - 43 (USSR) Received: April 25, 1958 ABSTRACT: Here the formulaefor the self-excitation conditions and self--oscillation frequency for self-excited alternating current generators with transformer-, autotransformer- and capacitative feedback are derived. For this purpose at first the general fundaments - equation (3) for the self-excitation conditions and equation (4) for the approximated value of the self-oscillation frequency (without consideration of the nonlinearity of the system) - are put down. Then the generator with autotransformer-feedback is investigated. Starting from (3) the formula for the coupling-coefficient no is obtained Card 1/3with two values for it. Two values are obtained because the

ASSOCIATION: Not given
PRISENTED BY:
SUBMITTED: 26 January 1957
AVAILABLE: Library of Congress
Card 2/2

PA - 3216

AUTHOR:

TITLE:

BERESTNEV, P.D.

A Simplified Analysis of Circuit Diagrams for High Frequency Genera-

tors with Self-Excitation in Flat Crystal Triodes.

(Uproshchennyy analiz skhem voh generatorov s samovozbuzhdeniyem na

PERIODICAL:

ploskostnykh kristallicheskikh triodakh. Russian). Radiotekhnika, 1957, Vol 12, Nr 4, pp 39 - 44 (U.S.S.R.)

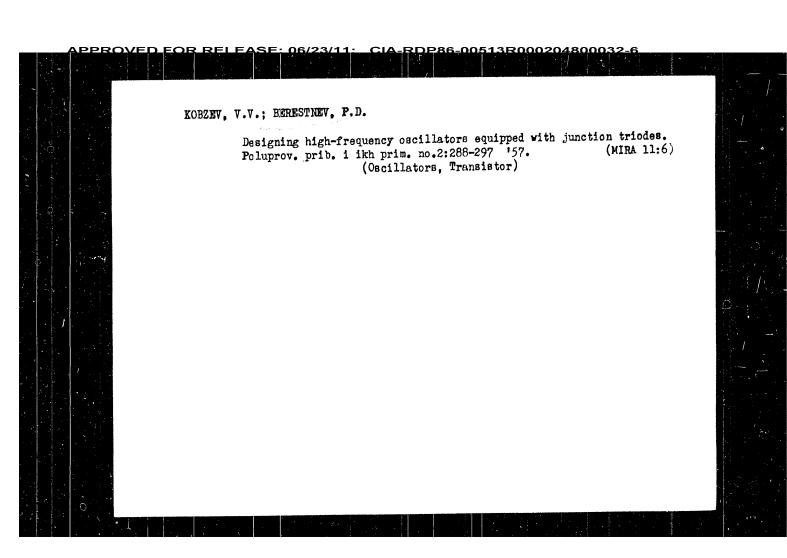
Received: 6/1957

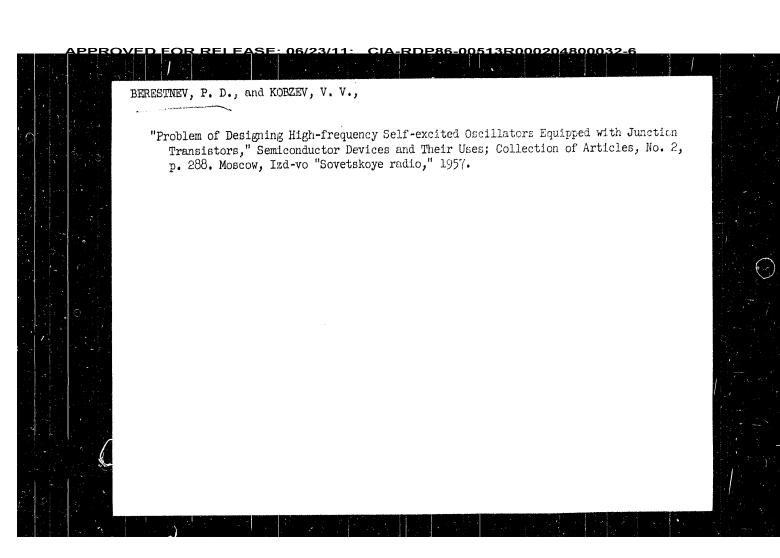
Reviewed: 7 /1957

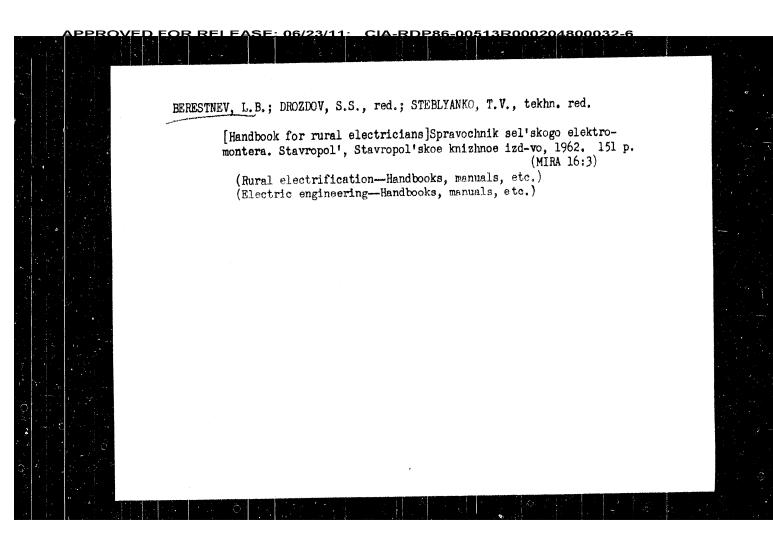
ABSTRACT:

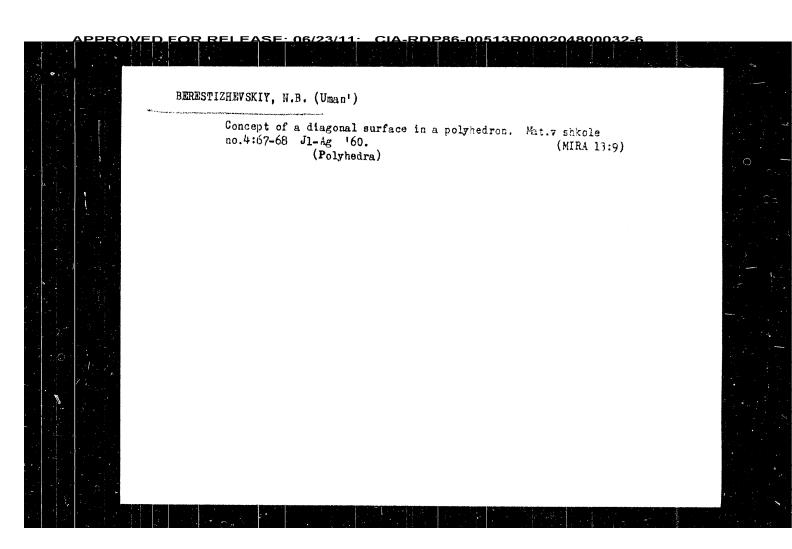
It is possible to obtain approximate formulae for the generated frequency and the self-excitation conditions if a crystal tricde is conceived as an active linear quadripole with Y-parameters. The paper under review derives these formulae for two autogenerator circuit diagrams (with a common emitter and common basis) with an oscillatory circuit in the circuit of the collector. The equitation for the amplification coefficient with regard to the voltage is found and the real part is separated from the imaginary part. The real part is equated to one, and then the conditions for the self-excitation are obtained. The connection between the input circuit and the output circuit may be established by a transformer or autotransformer, or it can be a capacity connection. A chart contains a compilation of the data of the three Soviet triode types P6G with respect to the Y-parameters. (2 reproductions, 1 chart, 1 Slavic reference).

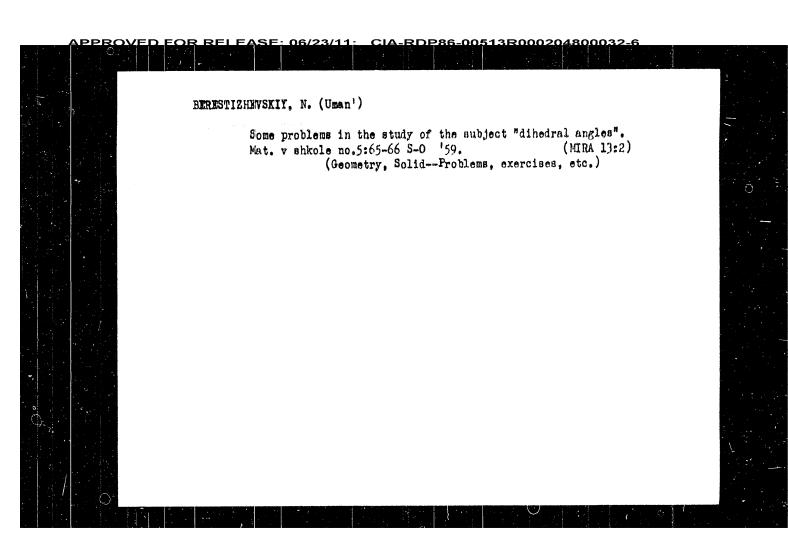
Card 1/2

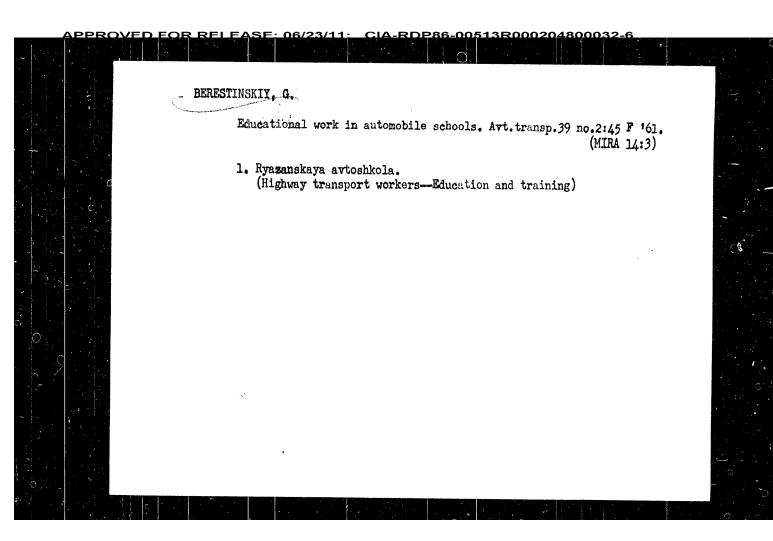








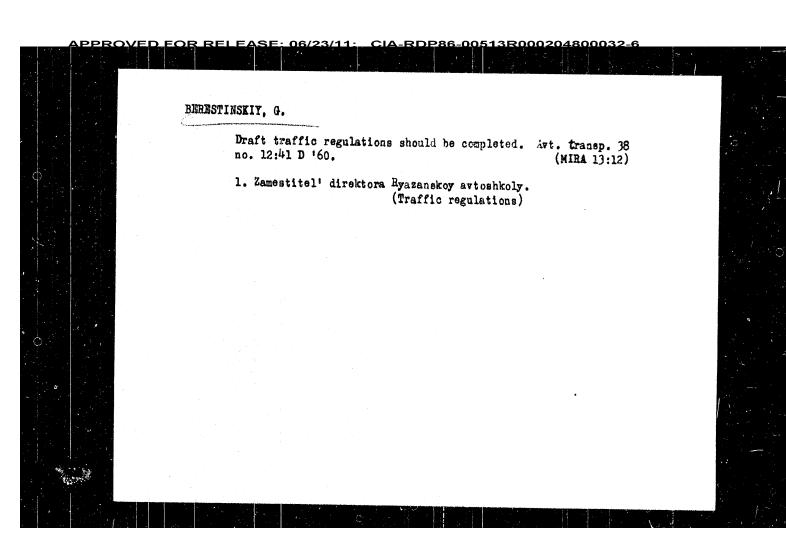




BERESTINSKIY, G., inzh. (Ryazan')

How to check whoel camber and tee-in angles. Za rul. 19 no. 2:17-18 F '61.

(Automobiles--Whoels)



RERESTINGATY, G., insh. (Rynzan')

Object lessons and once more object lessons. Za rul. 18 no.10:
16 0 '60. (Automobile drivers)

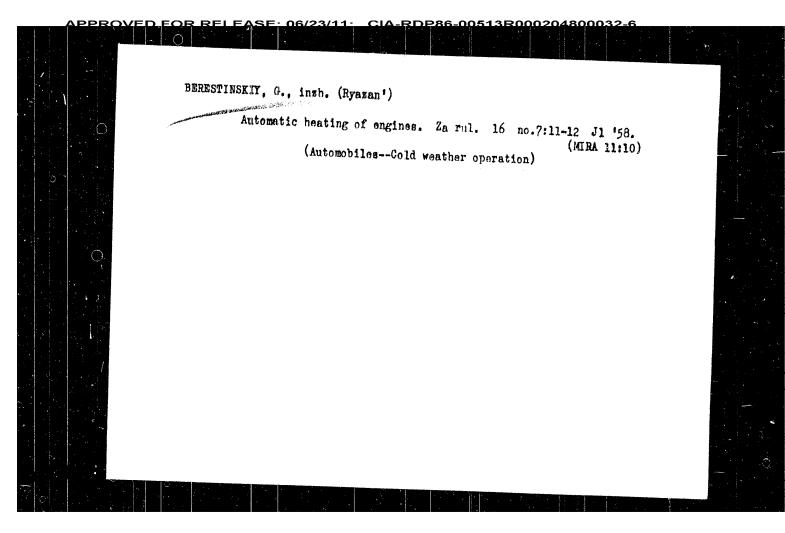
(MIRA 14:1)

BERESTINSKIT, G., insh. (Ryasan')

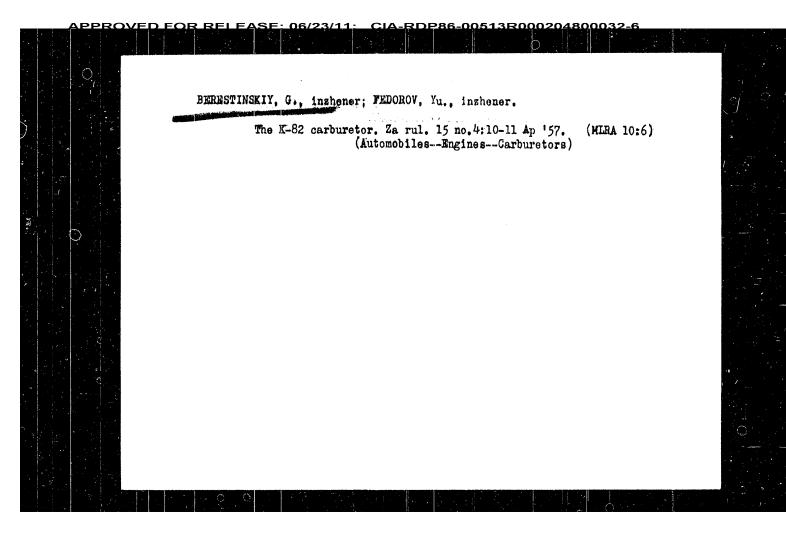
Brake system, Za rul. 17 no.9:18-19 S '59. (HIA 13:1)

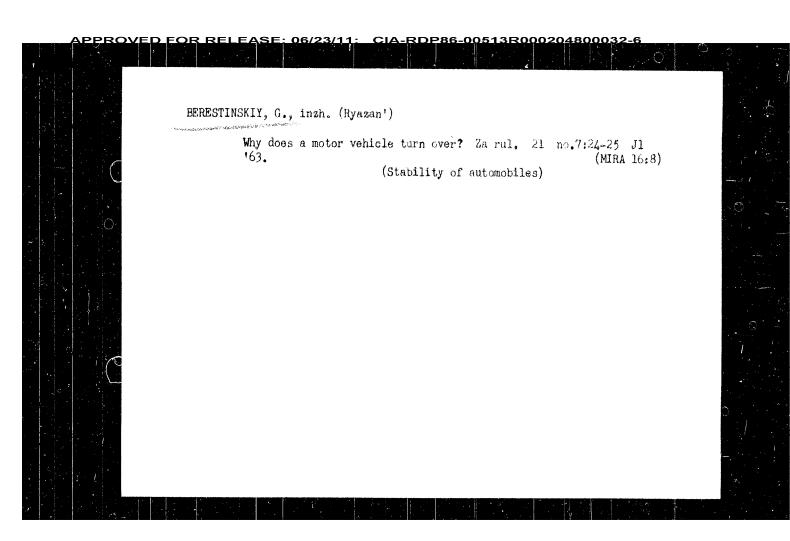
(Automobiles-Brakes)

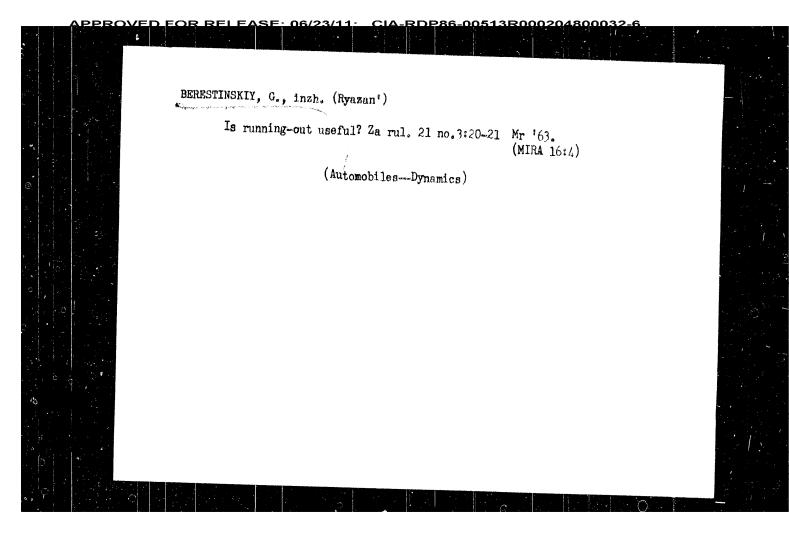
BERESTINSKIY, G. Efficient utilization of lesson time. Za rul. 17 no.7:19 Jl. '59. (MIRA 13:1) 1. Zaveduyushchiy uchebnoy chast'yu Ryazanskoy avtonobil'noy shkoly. (Automobile drivers)



PERCYENTERS OF STATE OF STATE







ACC NR. AH5022324

Concluding remarks -- 95

Bibliography -- 99

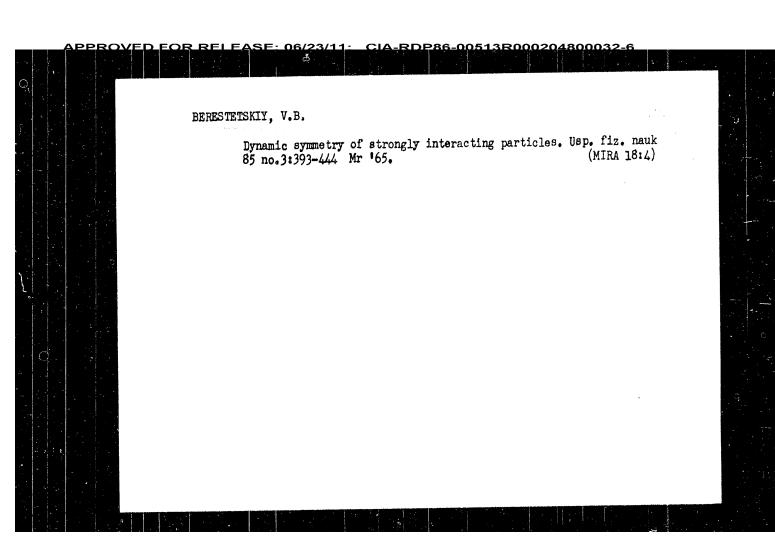
AVAILABLE: Library of Congress

SUB CODE: 20 / SUBH DATE: 01Dec64/ ORIG REF: 003/ OTH REF: 025

```
.... بدور
ACC NIL
        AH5022324
  43. Supermultiplets -- 47
      Diagram of isomultiplets -- 52
      Expansion of product -- 55
       Tensor operators -- 58
       Problem of composition -- 61
       Decuplet and octet -- 65
       Diagram of decuplet -- 65
       Vector orts -- 67
   3. Real vectors and charge conjugation -- 71
Ch. VI. Hoderate and electromagnetic interaction -- 73
   1. Perturbation vectors -- 73
      Gell-Mann-Okubo mass formula -- 74
       Electromagnetic mass splitting -- 77
       The case of multiple points -- 79
 Ch. VII. Weak interaction -- 83
      Cabibbo parameter -- 83
       Lepton decays -- 87
       Non-lepton decays and weak nuclear forces -- 91
        0 - decay -- 93
LCard 3/4
```

```
AM5022324
ACC NR
      Hypercharge -- 9
   4. Hadron composition -- 11
   5. U2 and SU2 groups -- 12
Ch. II. Isogroup -- 15
   1. SU2 generators and diagram of nucleons -- 15
   2. Antinucleon doublet -- 17
   3. Isomultiplets -- 18
   4. Expansion of product -- 22
   5. Tensor operators -- 23
   6. Displaced isomultiplets -- 25
   7. Electromagnetic interaction -- 27
       Weak interaction -- 29
Ch. III. Second isogroup -- 32
   1. U - multiplets -- 32
   2. Moderate interaction -- 35
   3. Electromagnetic interaction -- 36
       Group expansion -- 38
Ch. IV. SV3 group -- 41
   1. SU3 - generators and diagram of quarks
   2. Antiquarks -- 46
Cord 2/4
```

ACC NR AN5022324 Monograph UR/ Berestetskiy, V. B. Dynamic symmetries of strongly interacting particles (Dinamicheskiye simmetrii sil'novzaimodeystvuyushchikh chastits) Moscow, 1964. 100 p. illus., biblio. 350 copies printed. Series note: USSR. Gosudarstvennyy komitet po ispol'zovaniyu atomnoy energii. Institut teoreticheskoy i eksperimental noy fiziki. [Doklady] no. 301 TOPIC TAGS: strong interaction, weak interaction, elementary particle, high energy physics, hadron, lepton, baryon, quark PURPOSE AND COVERAGE: This booklet is intended for nuclear physicists. The booklet describes the dynamic symmetries of strongly interacting particles. The author thanks L. B. Okun. There are 28 references, primarily English, TABLE OF CONTENTS Ch. I. Hadron quantum numbers -- 5 1. Baryon number -- 5 Calibration groups -- 6 2. Card 1/4



L 10210-63 ACCESSION NR: AP3000056 simultaneously a zero pole in both its "sense" and "nonsense" elements. The Gell-Mann hypothesis is therefore in agreement with the analytic properties of the residues of physical partial wave amplitudes near j = 0 and ensures the finite nature of all scattering amplitudes. "I express my gratitude to I. Ya. Pomeranchuk for numerous important discussions, and also to V. N. Gribov, N. N. Meyman, and I. M. Shmushkevich for discussions." Orig. art. hes: 33 formulas and 1 table. ASSOCIATION: Institut teoreticheskoy i eksperimental noy fiziki (Institute of Theoretical and Experimental Physics). OfDec62 DATE ACQ: 12Jun63 SUBMITTED ENCL: NR REF SOV: 006 SUB CODE: OTHER: 005

L 10210-63

EWT(1)/FCC(v)/EDS\_APPTC/ASD\_IJP(C)

ACCESSION NR: AP3000056

8/0056/63/044/005/1603/1611

AUTHOR: Berestetskiy, V. B.

51

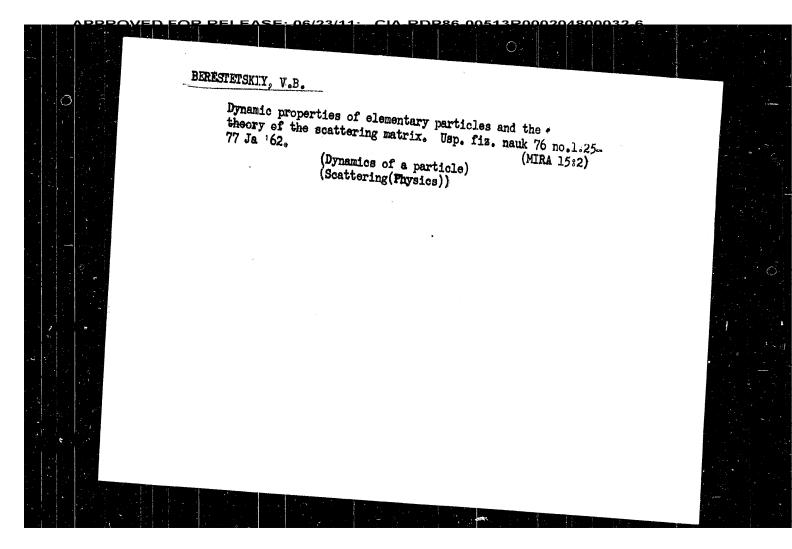
TITLE: Asymptotic behavior of scattering amplitudes and the problem of "ghosts" on the trajectories of vacuum Regge poles

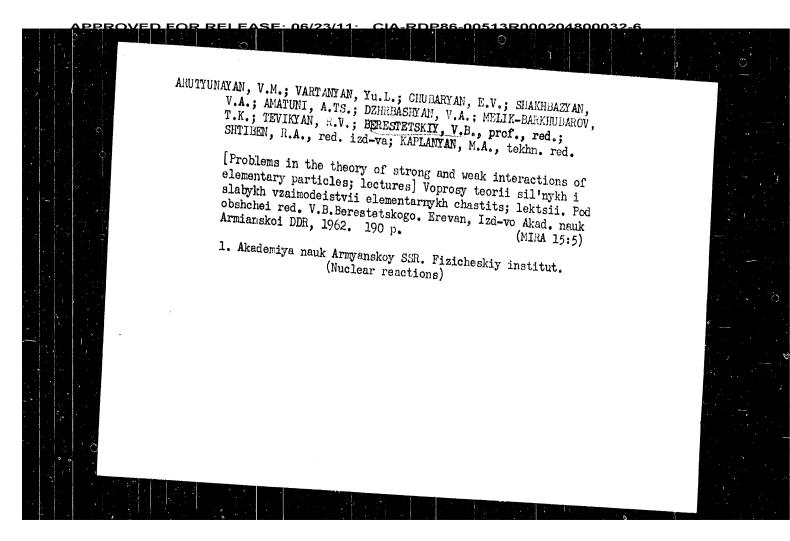
SOURCE: 2hurnal eksper. 1 teoret. fiziki, v. 44, no. 5, 1963, 1603-1611

YOPIC TACS: Regge poles, scattering amplitudes, unphysical region

ABSTRACT: Asymptotic expressions are obtained for elastic pion-pion, pion-nucleon, and nucleon-nucleon scattering amplitudes in the region where the principal leggs pole passes through the value j = 0. It is shown that the difficulty arising in connection with unphysical (ghost) states arising when the scattering amplitude becomes infinite does not arise in actuality, and that the original Gell-Mann hypothesis that for given values of j and t the partial-wave amplitude is not a number but a matrix is sufficient to eliminate the 'ghost'. Moreover, if one accepts the usual ideas about the analytic properties of partial wave amplitudes as functions of j, then the matrix cannot have

Card 1/2





Higher nucleon charge and... \$\frac{5}{056}\frac{61}{040}\frac{003}{037}\frac{5}{100}\frac{1}{30}\frac

Higher nucleon charge and...  $\frac{S/056/61/040/001/030/037}{B102/B212}$   $\frac{c_{i,i}^{i}=NQ_{i}(1+2\eta^{3})\left\{-\frac{A}{2p}J_{1}-\frac{2\eta^{3}}{2\eta^{3}}J_{3}\right\},}{\sqrt{\frac{1}{1-1}\eta^{3}}\left[-\frac{\omega^{3}J_{3}}{\eta^{3}}J_{1}-\frac{\omega^{3}J_{3}}{\eta^{3}}\right]}, \qquad (12)$   $\frac{b_{i,i}^{i}=NQ_{i}(1+2\eta^{3})\sqrt{\frac{1}{1-1}\eta^{3}}\left[-\frac{\omega^{3}J_{3}}{\eta^{3}}J_{1}-\frac{\omega^{3}J_{3}}{\eta^{3}}\right]}{\frac{Mp}{Mp}} + (1+2\eta^{3})\frac{p(M+p)}{M(m+p)}, \quad B=1+\frac{M}{m+p};$   $J_{1}:=\frac{p\sqrt{m}}{2}\frac{1}{1^{m}}\left[1-\frac{\sqrt{m}}{8}\left(1-\frac{1}{L}\right)\right], \quad J_{2}:=-2l^{2}\sqrt{m}\frac{1}{L^{m}}\left[1-\frac{\sqrt{m}}{8}\left(1-\frac{1}{L}\right)\right];$   $J_{2}:=\frac{p\sqrt{L}}{2}, \quad \eta=\mu/p, \quad \omega=\eta\sqrt{1+\eta^{2}}, \quad N=ie^{2}p/2\pi,$   $L=\eta(l+1)/\sqrt{1+\eta^{2}}.$ P<sub>1</sub>, k<sub>1</sub> are nucleon and meson momentum, respectively. Finally the authors and B. L. Ioffe are mentioned. There are 6 references: 1 Soviet-bloc and

89224

Higher nucleon charge and ...

S/056/61/040/001/030/037 B102/B212

is obtained;  $J_1^{-1}\delta_1^J$  are the triplet and singlet scattering phases with a total momentum J,  $\mu_0^J$  and  $\mu_0^J$  denote the state shift parameters for total spin O and 1 and the states with orbital momenta J-1 and J+1. If the spectral densities are determined by (5) the quantities  $\mathbf{a_i^k}$  and  $\mathbf{b_i^k}$  can be

$$a_{i}^{l} = NQ_{l}(1+2\eta^{2}) \left\{ -\left[\frac{A}{p} + \frac{\omega B}{lM}\right] J_{1} + \left[\frac{\omega (1+2\eta^{2})}{lM} - 4\frac{l+1}{l}\frac{\eta^{4}(1-\eta^{4})}{M}\right] J_{2} \right\},$$

$$a_{l}^{l-1} = NQ_{l}(1+2\eta^{2}) \left\{ -\left[\frac{A}{p} + \frac{l+1}{l}\frac{\omega B}{M}\right] J_{1} + \left[\frac{l+1}{l}\frac{\omega (1+2\eta^{2})}{M} + \frac{4(l+1)^{3}\eta^{4}(1-\eta^{4})}{l(l-1)M}\right] J_{2} \right\},$$

$$a_{l}^{l+1} = NQ_{l}(1+2\eta^{2}) \left\{ -\left[\frac{A}{p} - \frac{\omega B}{M}\right] J_{1} + \left[-\frac{\omega (1+2\eta^{3})}{M} + \frac{4(l+1)\eta^{4}(1-\eta^{4})}{(l+2)M}\right] J_{2} \right\},$$

$$b_{l}^{l-1} = NQ_{l}(1+2\eta^{2}) \left\{ -\left[\frac{A}{2p} + \frac{l+1}{l}\frac{\omega B}{M}\right] J_{1} + \left[\frac{l+1}{l}\frac{\omega (1-2\eta^{2})}{M} - \frac{2\eta^{2}}{M}\right] J_{2} \right\},$$

$$b_{l}^{l+1} = NQ_{l}(1+2\eta^{2}) \left\{ -\left[\frac{A}{2p} - \frac{\omega B}{M}\right] J_{1} + \left[-\frac{\omega}{M}(1-2\eta^{2}) - \frac{2\eta^{2}}{M}\right] J_{2} \right\},$$

Card 4/6

Higher nucleon charge and...  $\frac{8922l_i}{8/056/61/040/001/030/037}$   $(r_1^{2n})^{V} = \frac{4r^2(2n+1)!}{(4\mu^2)^n n!} \left[ -\frac{(n-1)!\epsilon}{4} + \frac{(2n-3)!!}{2^{n+1}} + \frac{\epsilon^2}{4} \frac{(2n-1)!!}{2^{n+1}} \right], \quad (9)$   $(r_2^{2n})^{V} = \frac{r^2(2n+1)!}{\epsilon(4\mu^2)^n n!} \left[ \frac{(n-2)!}{4} - 2\epsilon \frac{(2n-2)!!}{2^{n+1}} \right], \quad (9)$   $p_{\nu}^{V}(r) = \frac{l^n}{(2n)^n} e^{-2\nu r} \left[ -\frac{n\epsilon}{r^2} + 3 \sqrt{\frac{n}{\mu}} \frac{1}{r^{1/\mu}} \right], \quad (10)$ Finally the deviation from its value of the scattering phase at an electron-nucleon scattering for a point nucleon is studied and expression  $|V^{I(l-1)}/(2l-1)|a^{l-1}-b^{l-1}|=2i\gamma^{l-1}, \quad (l^l+2)/(2l+3)|a^{l+1}-b^{l+1}|=2i\gamma^{l-1}, \quad (l^l+2)/(2l+3)|a^{l+1}+[(l+1)/(2l+3)]b^{l+1}_{l^1}=-2i^2b^{l+1}_{l^1}, \quad (l^1)/(2l-1)|a^{l-1}+[l^1/(2l-1)]b^{l-1}_{l^1}=-2i^2b^{l-1}_{l^1}, \quad a_{l^1}=-2i^2b^{l}_{l^1}, \quad a_{h^1}=-2i^1b^{l}_{h^1}, \quad b_{h^1}=2i\gamma^{l}_{h^1}.$ 

89224

Higher nucleon charge and ...

S/056/61/040/001/030/037 B102/B212

scattering and the part of the multi-meson and nucleon states. To compute these quantities was the aim of the present work; they are the higher charge and magnetic-moment distribution moments:

$$(\overline{r^{2n}})_{1}^{V} = \frac{(-1)^{n}(2n+1)!}{n!} G_{1,2}^{V(n)}(0) = \frac{(2n+1)!}{\pi} \int_{0}^{\infty} \frac{g_{1,2}^{V}(t)dt}{t^{n+1}}$$

or higher multipole potentials of the nucleon transition  $a_1$ . Using  $g_{1,p}^V = \frac{8}{3} t^2 \xi^3 / \epsilon^2$ ,  $g_{2,p}^V = 4 t^2 \xi^5 / \epsilon^4$ ,  $\xi \ll \epsilon / 2$  (4),  $g_{1,p}^V = t^2 [2\xi - \pi \epsilon / 2 + \epsilon^2 / 2\xi]$ ,  $g_{2,p}^V = -2 t^2 [2\xi - \pi \xi^2 / 2\epsilon]$ ,  $\xi / 2 / \xi \ll 1$  (5), with  $\xi = \sqrt{t/4\mu^2 - 1}$  and  $\xi = \mu / M$ ,  $\mu$  - meson mass, M - nucleon mass, and  $\xi V(r) = \frac{1}{(2\pi)^2} \int_{4\mu^2}^{\infty} g^V(t) \frac{1}{r} \exp(-\sqrt{tr}) dr$  the relations are obtained:

5/056/61/040/001/030/037 B102/B212

24.640 a

Berestetskiy, V. B., Terent'yev, M. V.

TITLE:

Higher nucleon charge and magnetic-moment distribution

PERIODICAL: Zhurnal eksperimental noy i teoreticheskoy fiziki, v. 40,

no. 1, 1961, 324-327

TEXT: The problem of spectral densities  $g_1^V$  and  $g_2^V$  of isovectorial electromagnetic form factors of the nucleon  $(G_1^V$  and  $G_2^V)$  due to two-pion states has been investigated in Refs. 1 and 2. To calculate them, it is necessary to know the scattering amplitudes of pions by nucleons in the nonphysical region of transferred momenta and energies. From the pole part of the amplitudes and  $(\pi,N)$  scattering data, only expressions for amplitudes at a transferred momentum t near  $t=4\mu^2$  can be determined; the anomalous magnetic moment and mean square nucleon radius  $r^2$  can not, however, be calculated without additional hypotheses about the  $(\pi,N)$ 

Card 1/6

86919

The Anomalous Magnetic Moments of Muon and

**\$/**056/60/039/005/036/051 B006/B077

limiting momentum. It is shown how the radiative corrections in quantum dynamics can be calculated by application of the dispersion relations and unitarity conditions. The corrections to the magnetic moment are given by taking into account the cutoff at high momenta.  $\lambda_0^2 \sim 18 m_{\pi}^2 \approx 36 m_{\mu}^2 \text{ (Hofstadter) leads to } 1 - \delta F = \sqrt{1 - 4 m_{\mu}^2/\lambda_0^2}, \text{ thus}$ 

 $\delta F \sim 0.06$  for the muon, and  $\delta F = 2m_e^2/\lambda_o^2$  for the electron  $(m_e - its mass)$ . The author thanks M. Terent'yev for discussions. There are 3 references:

SUBMITTED: June 2, 1960

86919 s/056/60/039/005/036/051 B006/B077 24.6900 Berestetskiy, V. B. The Anomalous Magnetic Moments of Muon and Electron AUTHOR: Zhurnal eksperimental noy i teoreticheskoy fiziki, 1960, TITLE: Vol. 39, No. 5(11), pp. 1427 - 1429 PERIODICAL: TEXT: In a previous work the author together with O. N. Krokhin and A. K. Khlebnikov had calculated the anomalous moment  $\delta\mu$  of the muon and had taken into consideration that quantum electrodynamics might; not and had taken into consideration that quantum electrodynamics might not be applicable in the range of large momenta (Ref.1). By introducing be applicable in the range of large momentum  $\lambda_0$  it was found that Feynman's cutoff factor with the limiting momentum  $\lambda_0$  it was found that  $\delta\mu/\mu=(\alpha/2\pi)(1-\delta F)$ . For  $m_\mu^2/\lambda_0^2\ll 1$  (m $_\mu$  - muon mass) the deviation from the Schwinger correction was equal to  $\delta F = 2m_{\mu}^2/3\lambda_0^2$ . De Tollis pointed out that an introduction of a cutoff factor in a different way leads to a somewhat different value of  $\delta F$ . In the present work it is examined which value of  $\delta\mu$  leads to the most convincing introduction of a Card 1/2

Bhilic

Asymptotic Behavior of Cross Sections at High S/056/60/039/004/034/048 Energies S/056/60/039/004/034/048

transformation of two particle into three, which is graphically shown in Fig. 1. Proceeding from the amplitude equation of this process, expressions are given in pole approximation for the differential cross section, the transferred momentum, etc. The transformation of two particles into four is studied analogously (see graphs of Figs. 2 and 3). It is found that in an energy range in which the total elastic scattering cross section is independent of energy, the cross section for the transformation of two particles into three is not reduced with an increase in energy, and that the cross section for the transformation of two particles into four increases logarithmically with an increase in energy. This suggests that the elastic scattering cross section tends to zero at very high energies. The authors thank V. N. Gribov, L. D. Landau, V. N. Mel'nikov, L. B. Okun', and I. M. Shmushkevich for discussions. I. M. Dremin and D. S. Chernavskiy are mentioned. There are 5 figures and 5 references: 2 Soviet, 1 US, 1 Italian, and 1 Dutch.

SUBMITTED: May 25, 1960

864.15

S/056/60/039/004/034/048 B006/B063

24,6520

AUTHORS:

Berestetskiy, V. B., Pomeranchuk, 1. Ya.

TITLE:

Asymptotic Behavior of Cross Sections at High E ergies

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 1078 - 1086

TEXT: The data on high-energy particle collisions available at present lead to the assumption that with an increase in energy the total collision cross section tends to a constant limit which is of the order of  $1/\mu^2$ , where  $1/\mu$  is the Compton wavelength of the pion. The elastic diffraction scattering cross section likewise tends to a limit, and the cross sections for the individual inelastic processes tend to zero with an increase in energy. However, these simple assumptions may well be wrong. The present paper gives approximate calculations of cross sections for inelastic processes, which indicate a different asymptotic behavior of the cross sections. As these calculations are only approximative, the conclusions drawn cannot make a claim to finality. They indicate, however, that the situation may be much more domained as the state of the authors at unit to expect the authors at unit to e

Card 1/2

BERRESTETSKIY, V.B.; ZHIZHIN, Ye.D. Photoproduction of  $\mathcal{I}$ -mesons on nucleons in peripheral collisions. Zhur. eksp. i teor. fiz. 39 no.2:418-426 Ag '60. (MIRA 13:9) (Mesons) (Collisions (Nuclear physics)) (Nucleons) (MIRA 13:9) (Nucleons) β-Interaction and Form Factor of the Nucleon 50V/56-36-4-50/70 complicated expression is given for the differential cross section of (1). There are 5 references, 1 of which is Soviet.

SUBMITTED: January 6, 1959

Card 2/2

21(7), 24(5) AUTHORS: Berestetskiy, V. B., Fomeranchuk, I. Ya. 507/56-36-4-60/70 TITLE:  $\beta$ -Interaction and Form Factor of the Nucleon ( $\beta$ -vzaž nodeystviye i formfaktor nuklona) PERIODICAL: Zhurnal eksperimental'nov i teoreticheskov fiziki, 1959, Vol 36, ABSTRACT: One of the most characteristic properties of  $\beta\text{--interaction}$  is the rapid increase of effectivity with energy. However, the existence of strong interaction leads to an occurrence of form factors in nucleons which may influence the energy dependence of the  $\beta\text{-processes}$  considerably. An investigation of  $\beta\text{-transforma-}$ tions at high energies, e.g. process (1) of transformation of the electron into a neutrino (e + p  $\rightarrow$  n +  $\sim$ ) may serve the purpose of determining these form factors. Today it may be said that the  $\beta$ -interaction consists of V- and A-V-interactions. For process (1) the matrix element in the present "Letter to the Editor" is written down according to references 3 and 4. On the basis of the assumption that the hypothesis developed by Gell-Mann and Feynman (Ref 1) holds good and that the electron Card 1/2 energy is supposed to be high as against its own mass, a rather

Quantum Electrodynamics (Cont.)

SOV/2950

(Chapter VII); the study of dynamic processes in the first, not zero, approximation, not related to the removal of divergences and renormalizations, is given in Chapters V and VI; and higher approximations, in Chapter VIII. The number of electrodynamic phenomena covered has been increased, and in particular the theory of polarized particle processes, the method of "sighting" concepts have been introduced. The book aims on one hand to give a clear physical picture of principles and results of quantum tunity to master the method and technique of appropriate computation. The authors thank V. Aleksin, V. Bar'yakhtar, V. Boldyshev, D. Volkov, S. Peletminskiy, R. Polovin, and P. Fomin for footnotes.

TABLE OF CONTENTS:

Foreword to the Second Edition

Card 3/26

9

Quantum Electrodynamics (Cont.)

SOV/2950

effect, brehmsstrahlung, the creation and annihilation of electronposition pairs, the equivalent photon method, radiative corrections to atomic level and scattering, scattering of light by light and polarized particle processes are reviewed. The present intense interest in these subjects is attributed by the authors to the discovery of the nonconservation of parity. The various sections contain numerous computations, illustrated applications of general methods, and final results in the form of formulas and curves which may be used both in theoretical and experimental applications. As to the principal problems of quantum electrodynamics, the theory of renormalizations underwent the greatest revision. While the authors do not profess complete mathematical strictness, they attempt to set forth the concept of renormalizations from one simple physical point of view, avoiding prescribed methods for removing divergences and utilizing the general properties of quantum mechanics systems to the full. In relation to this, some changes have been made in the organization of the book: the investigation of the S matrix in light of the theory of radiative corrections is treated in a separate chapter

## BERESTETSKIY, VB

24(5); 21(7),(8) PHASE I BOOK EXPLOITATION

SOV/2950

Akhiyezer, Aleksandr Il'ich, and Vladimir Borisovich Berestetskiy

Kvantovaya elektrodinamika (Quantum Electrodynamics) 2d ed., rev. Moscow, Fizmatgiz, 1959. 656 p. Errata slip inserted. 10,000

Ed.: Ye. Ye. Zhabotinskiy; Tech. Ed.: N. A. Tumarkina.

PURPOSE: This book is intended for students in advanced physics courses, Aspirants, and scientific researchers in this field.

COVERAGE: This is the second edition of a book which first appeared in 1953. Most of the chapters have been rewritten and much new material has been included. The book examines in detail the basic theories of quantum electrodynamics; i. e., the general theory of wave fields, the theory of Green's functions, and the theory of scattering (S-) matrix. Radiation, internal conversion of gamma rays, the behavior of electrons in an external field, the Compton

Card 1/26

Lev Davidovich Landau. On His Fiftieth Birthday

53-64-3-8/8

Then the author shortly reports on various works which do not belong to the theory of solids. During World War II he worked, among others, also in the field of "ordinary" hydrodynamics. Finally a short survey on Landau's works concerning quantum electrodynamics and the theory of elementary particles follows. One of his last works deals with the problem of the non-conservation of parity in weak interactions. There are 1 figure and 81 references, all of which are Soviet.

: 1. Physics--USSR 2. Scientific personnel--USSR

Card 3/3

53-64-3-8/8

Lev Davidovich Landau. On His Fiftieth Birthday

specializing in theoretical physics, and a helpful method for the theorist. This work contains many original ideas and methods, it is organically connected with Landau's systematic work on the education of young theoretical physicists. Landau founded a great scientific school, the representatives of which are successfully working in various fields of thecretical physics. He was three times awarded the Stalin price and in 1946 was elected Ordinary Member of the Academy of Sciences of the USSR. He was born in Baku on January 22, 1908. Already when 14 years of age he entered Baku University, and in 1924 he changed over to Leningrad University where he finished his studies in 1927 when he was 19 (nineteen !) years of age. After his university studies he worked in the Leningrad Institute for Technical Physics. His first scientific work was published in 1926. Starting from 1926 he spent altogether one and a half years in Denmark, Germany, Switzerland, Holland and England. In 1933 and 1934 he also came to Copenhagen on an invitation by Niels Bohr. In 1930 he wrote a fundamental work on the theory of metals, and in 1935 a fundamental work on the theory of ferromagnetism. He also contributed essentially to the theory of phase transitions.

BERESTETSKIY V.B. 53-64-3-8/8 AUTHOR: Beredetskiy, V. B. TITLE: Lev Davidovich Landau (Lev Davidovich Landau) On His Fiftieth Birthday (K pyotidesyatiletiyu so dnya rozhdeniya) Uspekhi Fiwichekikh Mauk, 1958, Vol. 64, Mr 3, pp. 615-623 PERIODICAL: (usar) Landau takes one of the most prominent places in modern theo-ABSTRACT: retical physics. The unusual scope of his xientific interests and of his scientific work are especially to be mentioned. Novhere his wide scope and his feeling for the unity of theoretical physics is so fully demonstrated as in the work of several volumes created by himself and Ye. H. Lifshits which is called "Theoretical Physics" ("Teoreticheskaya fizika"). The 6 volumes edited until now (mechanics, theory of the field, quantum mechanics, statistical physics, mechanics of continuous media, electrodynamics of continuous media) simultaneously represent an encyclopedia of modern Card 1/3theoretical physics, a systematic guide for

The Polarization of a Nucleus by a Radiation K-Capture

SOV/56-35-2-47/6c

the vector of the photon momentum although the photon is emitted without a change of parity. However, the polarization of the nucleus depends on the polarization of the absorbed virtual electron. This electron is polarized along the direction of its momentum, and this direction is opposite to that of the momentum of the emitted photon. The author thanks A. I. Alikhanov, V. A. Lyubimov, and L. B. Okun' for discussing this paper. There are 6 references, 2 of which are Soviet.

SUBMITTED:

May 19, 1958

24(7) SOV/56-35-2-47/60 . AUTHOR: Heredetskiy, V. B. TITLE: The Polarization of a Nucleus by a Radiation K-Capture (Polyarizatsiya yadra pri radiatsionnom K-zakhvate) Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, PERIODICAL: Vol 35, Nr 2(8), pp 537-538 (USSR) ABSTRACT: First, some previous papers are mentioned. The polarization of atomic nuclei is caused also by the radiation capture of an orbital electron  $e + p \rightarrow n + y + \gamma$ . Also in this case, the polarization of the nucleus is described by the formula  $\langle \vec{J} \rangle = (1/3)(j+1) \begin{cases} \vec{v}, \text{ where } \vec{cv} \text{ denotes the velocity of the photon and } \vec{f} \text{ is a coefficient connected with}$ positron decay. In order to prove this assumption, the author investigated the matrix element of the radiation K-capture with a transition of the nucleus from the state  $\mathtt{j}_{1}\mathtt{m}_{1}$  to the state jm. An expression is given for the density matrix of the polarization of the daughter nucleus. It may seem strange that the pseudovector  $\left\langle \begin{array}{c} J \\ \end{array} \right\rangle$  is proportional to Card 1/2

The Polarization of the Internal Conversion Electrons \$07/56-35-1-22/59 \*Following a  $\beta$ -Decay  $\langle \vec{\eth} \rangle = (r \cdot \vec{5}/j_2) \vec{n} (\vec{n} \vec{v})$ . In this case the polarization is longitudinal and does not depend on the energy of the conversion electron. The following holds for the case of an electric multipole:  $(\vec{\sigma}) = r \frac{L+1}{1+2\kappa+\kappa^2(2L+1)/L} \frac{\xi}{j_2} \left\{ (\kappa_+ \kappa^2)(\vec{n}(\vec{n}\vec{v}) - \vec{v}) + \frac{\kappa^2}{L} (\vec{n}\vec{v}) \vec{n} \right\};$ a longitudinal as well as a transversal polarization exist, being dependent on energy. At low velocities  $v_k$  of the conversion electrons longitudinal polarization is proportional  $(v_k/c)^4,$  and transversal polarization  $\sim (v_{\nu}/c)^2$ . In conclusion the authors thank A.I.Alikhanov, Academician, and V.I.Lyubimov for the interest they displayed and for their discussions. There are 3 references, 2 of which are Soviet. Card 2/3

. AUTHORS:

Berestetskiy, V. B., Rudik, A. P.

307/56-35-1-22/59

TITLE:

The Polarization of the Internal Conversion Electrons Following a  $\beta$ -Decay (Polyarizatsiya elektronov vnutrenney konversii, sleduyushchey za  $\beta$ -raspadom)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 1, pp 159 - 164 (USSR)

ABSTRACT:

The authors in the present paper investigate the connection between the polarization of the conversion electrons and the direction of the electrons emitted during a  $\beta$ -decay. The Coulomb-(Kulon) field of the nucleus is neglected in this connection. For the (axial) vector of the polarization of the conversion electrons the following ansatz is made (for the case of permitted  $\beta$ -transitions):  $\langle \vec{o} \rangle = a(\vec{vn})\vec{n} + b(\vec{v} - (\vec{vn})\vec{n})$ 

(a and b are constants which depend on the momenta of the nuclear state and the transition energy, cv is the velocity of 3-electrons, and n the unit vector in

of 3-electrons, and n the unit vector in the direction of the conversion transitions). For the case of a magnetic multipole the following is obtained:

Card 1/3 multipole t

BERESTETSKIY, V.BU, IOFFE, B.L., RUDIK, A.P., and TER'MARTIROSYAN, K.A

(Acad. Sci. USSR)

"F-Decay and Non-Conservation of Parity," Nuclear Physics, Vol. 5, No. 3, Feb 1958 (No. Holland Publ. Co., Amsterdam)

Abst; Effects due to non-conservation of parity such as longitudinal and transverse polarization of \$\epsilon\$-electrons, angular distribution of \$\epsilon\$-electrons from an oriented nucleus (including the case when the direction of the recoil nucleus nomentum is fixed are examined in the present paper for the cases of allowed \$F\$-transitions and first order forbidden transitions. It is shown that owing to the influence of the Coulomb field the magnitude of these effects for forbidden transitions in heavy and intermediate nuclei is the same as for allowed transitions, perceptible deviations are comparison with experiment may yield important data on the contribution of pseudoscalar coupling. Unique transitions (2 / 2, yes) for which the electron angular distribution of oriented nuclei essentally differs from that for allowed transitions are considered separately.

Scattering of K-Mesons with Change of Intrinsic Parity. PA - 2088 elements consists of a twodimensional matrix with respect to spin variables) The matrix R can be represented in the form of  $R = a + bC_p$ , where a denotes a scalar and b a pseudoscalar. Amplitude au describes the usual scattering (without transformation of internal symmetry) and has the form which is usual in the theory of the scattering of spinor waves. However, the authors also wish to ascertain the general form of the amplitude bu which describes the scattering with modification of internal symmetry. For this purpose the relation between the inciding and diverging wave is studied with certain values of momenta and of symmetry. This relation is explicitly written down and discussed. In the case of small momenta the term j = 1/2 corresponding to the transitions  $s_1/a \stackrel{+}{\sim} p_1/a$  will suffice. From the expression obtained for b it follows that, in the case of such a scattering, nucleons are not polarized. The considerations discussed here hold good also for the scattering of  $\Sigma$ - and  $\Lambda$ -particles by nuclei with the spin zero, if the spin of these particles is equal to 1/2. These considerations also hold good for the processes K + N+ $\Sigma$ +  $\pi$  and K + N + ASSOCIATION Not given ra S. WILD BY SUDMITTED AVAILABLE Library of Congress Card 2/2

## BERESTETSKIY, V.B

AUTHOR TITLE

BERESTECKIJ, V.B., BYCKOV, JU.A.

PA - 2088

Scattering of K-Mesons with Change of Intrinsic Parity (Rassejanie K-mesonov s izmenieniem vnutrennej četnosti).

RDP86-00513R0002048000

PERIODICAL

Zhurnal Eksperimental'noi i Teoret. Fiziki, 1957, Vol 32, Nr 1,

pp 181-183 (U.S.S.R.)

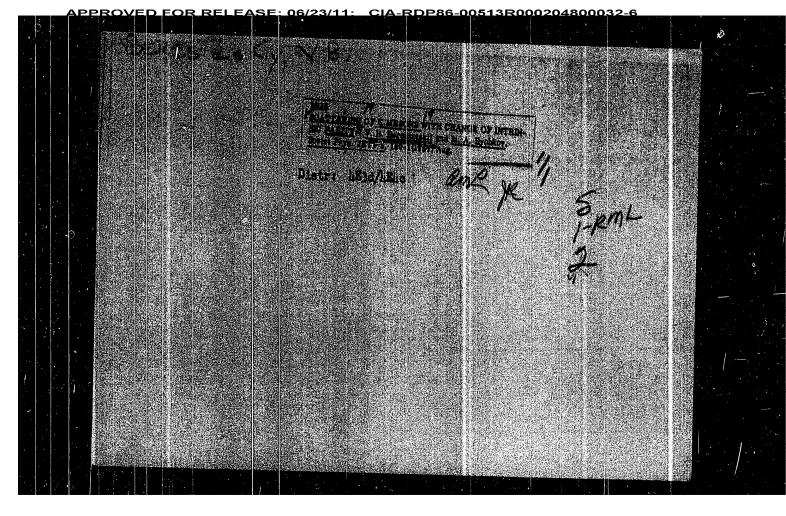
Received 3/1957

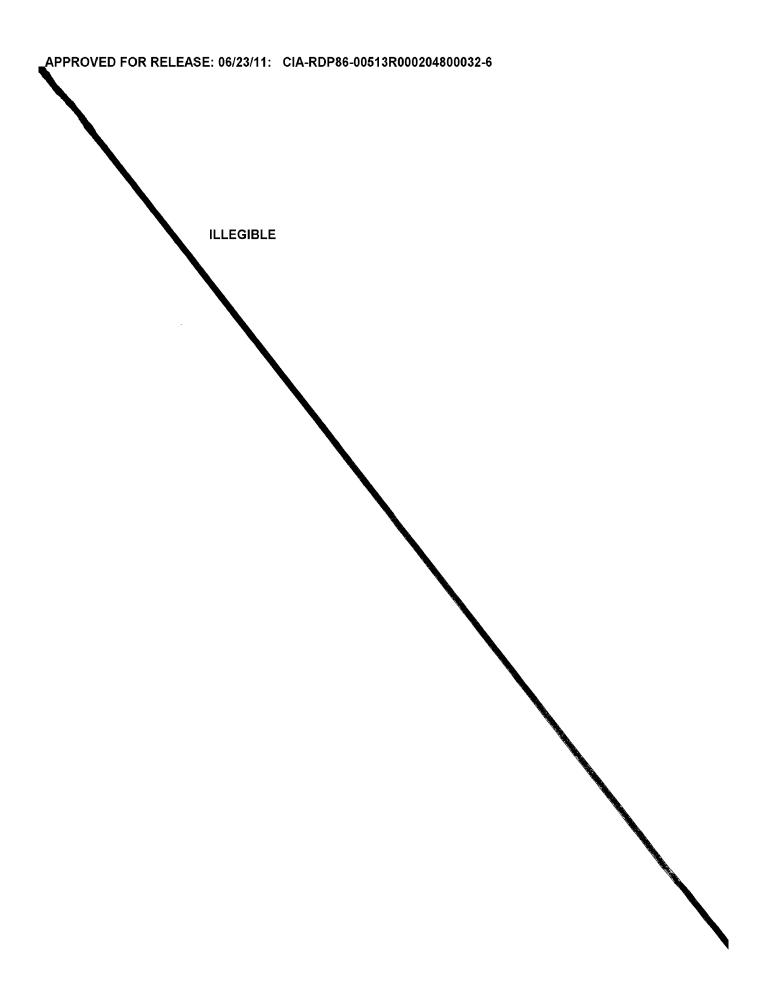
Reviewed 4/1957

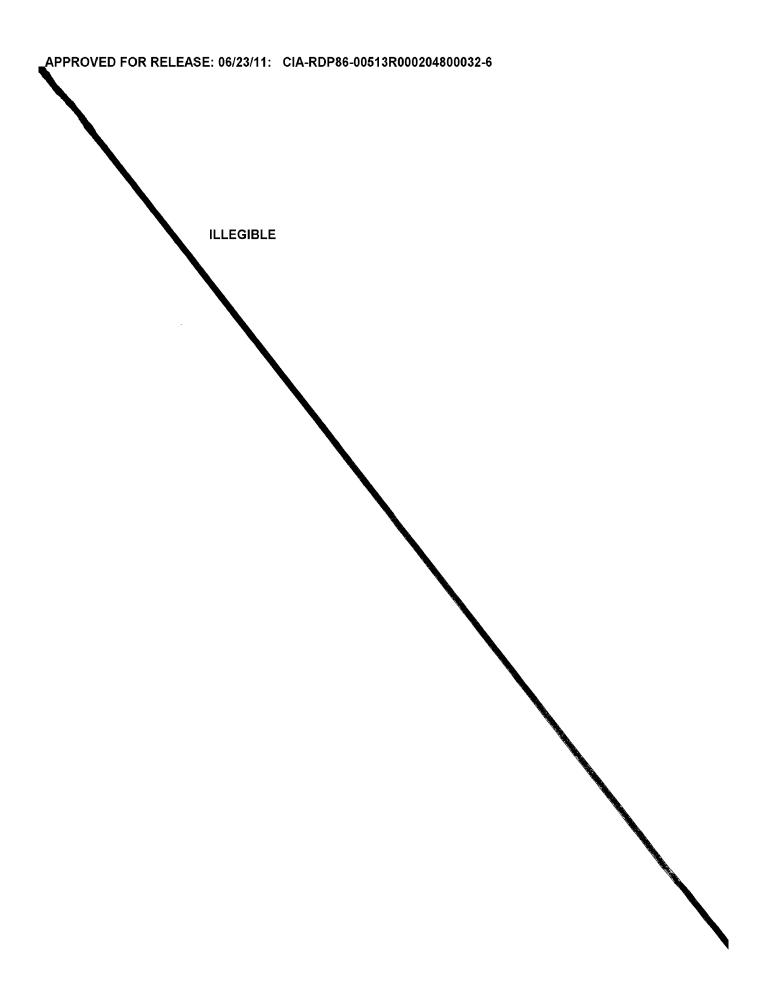
ABSTRACT

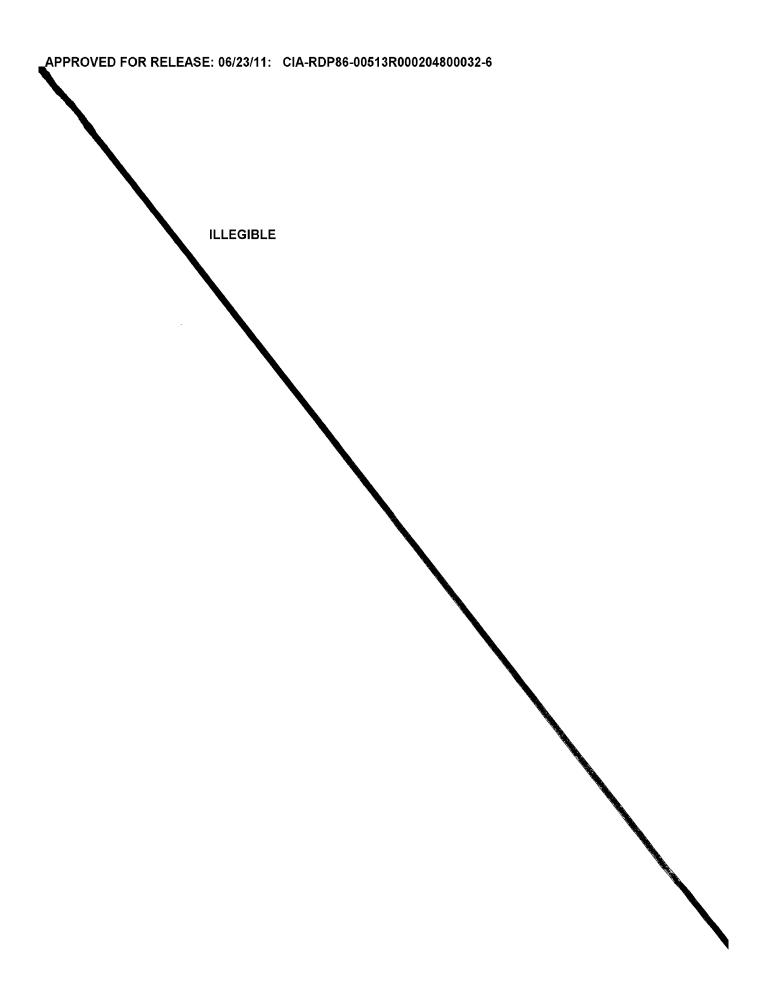
Analysis of experimental data on the decay of K-mesons (various relevant works are mentioned) leads with high probability to the following conclusions. 1) The spin of K-mesons is equal to zero. 2) K-mesons may occur in states of different internal symmetry, i.e. with positive (0-mesons) and with negative (7-mesons) symmetry. On the occasion of a collision between K-mesons and nucleons, the internal symmetry of K-mesons may change. (Transformation of 0-mesons into 7-mesons and vice versa) For the purpose of the investigation of some general properties of such a process, the authors form the wave function of the YK-meson-nucleon-system in the form of a total of two spinors Ye and Yr (which transform in different way on the occasion of reflection).  $\Psi = \begin{pmatrix} \psi_0 \\ \psi_1 \end{pmatrix}$ ,  $I \psi_0 = \psi_0$ ,  $I \psi_r = -\psi_1$ . Here I denotes the reflection operator. In the scattering problem  $\Psi$  has the following usual form  $\Psi = u$  exp  $(ikn_0r) + F(n)e^{ikr}/r$ . Here  $n_0$  and n denote the unit-vectors of the inciding and scattered wave, 1 and F the corresponding amplitudes, which, similar to  $\Psi$  are bispinorial quantities. If the properties of interaction between  $\theta-$  and  $\mathcal{T}-$ mesons and the nucleons are equal, this equality also holds good for the "symmetrically conjugated" amplitudes. The amplitude F in the above equation can be written down as F = Ru, in this connection R denotes a twodimensional matrix (Each of its

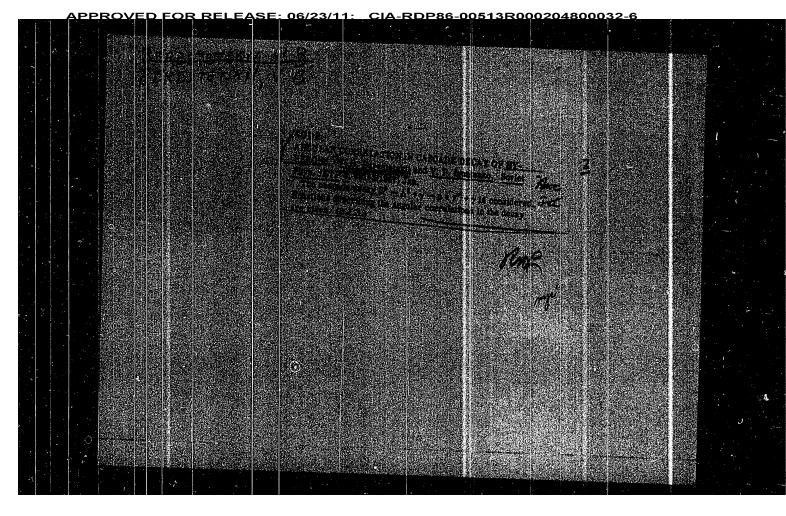
Card 1/2

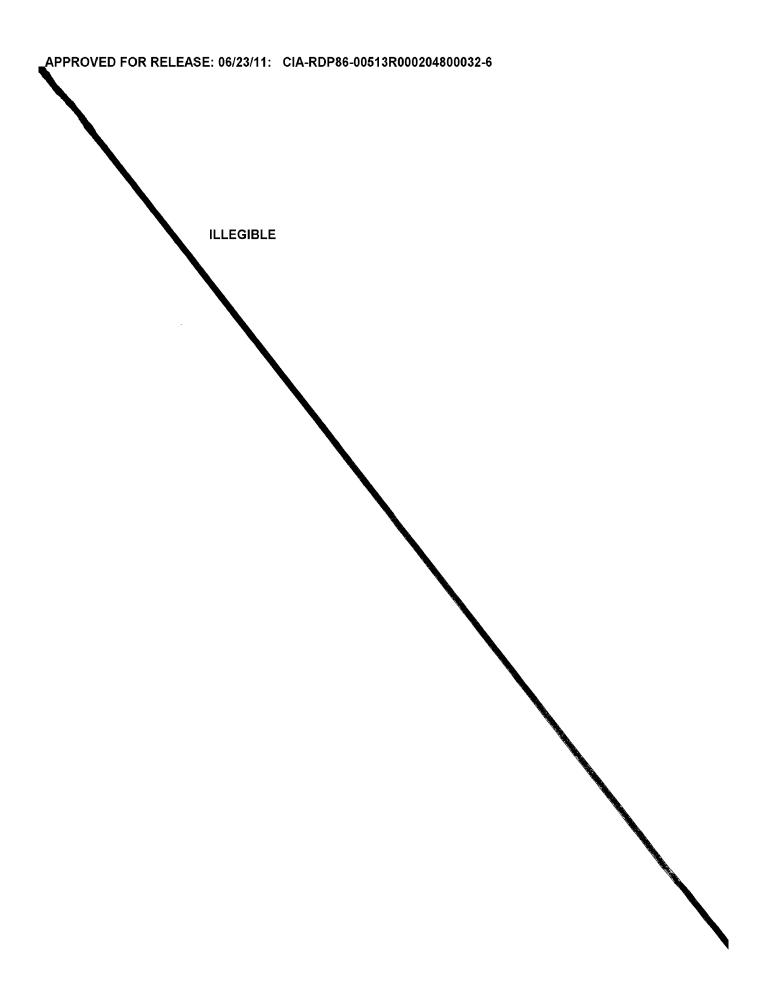


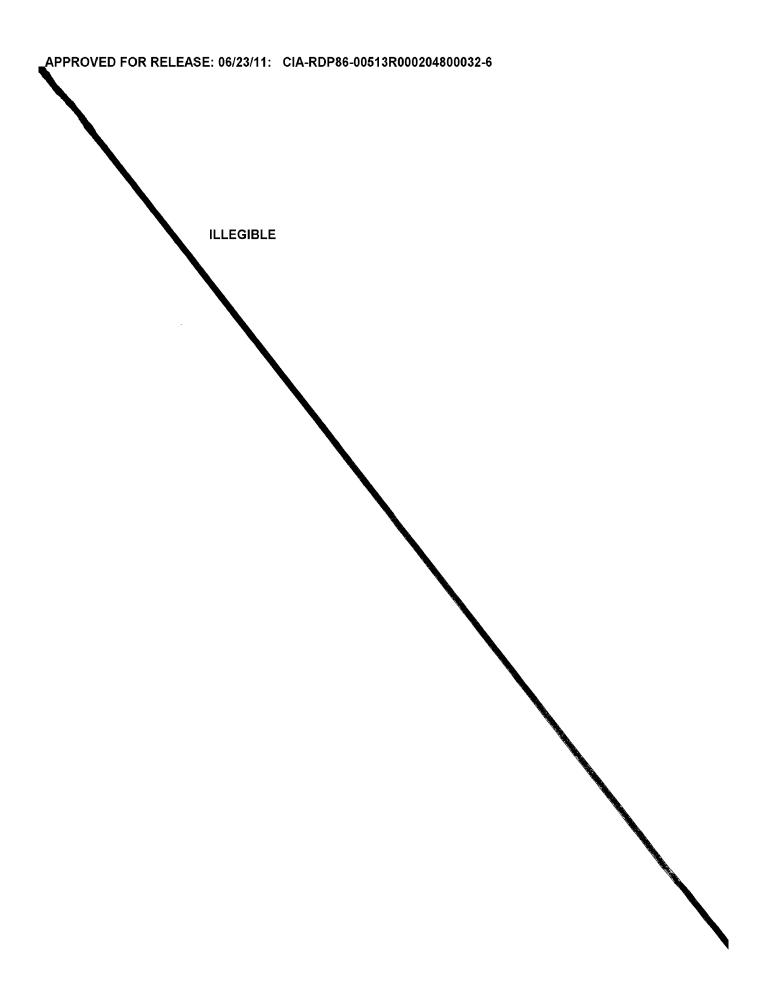




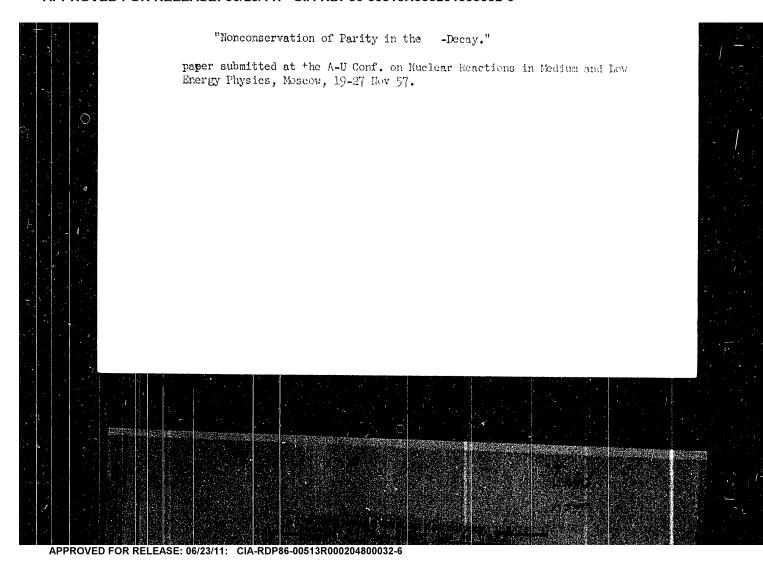








## APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800032-6



Zurn\_eksp.i teor.fis, 31, fasc.4, 723-723 (1956) CARD 2 / 2 PA - 1738 scattering f must have the following values:  $\sigma_{\rm g} = 10^{-30}$  cm² for Be, and  $\sigma_{\rm g} = 0.9 \cdot 10^{-28}$  cm² for U. Next, diffraction scattering is compared with the scattering of photons by a COULOMB field. The cross section  $\sigma_{\rm g}$  of scattering by a COULOMB field at E  $\gg$  cm² has the value  $\sigma_{\rm g} = 8.5 \cdot 10^{-35} \, {\rm Z}^4$  cm². Thus, the ratio  $\sigma_{\rm g}/\sigma_{\rm g}$  is modified from 50 for Be to  $10^{-2}$  for U, i.e. in the case of heavy nuclei the diffraction scattering is considerably less efficacious than the coherent scattering by the charge. Nevertheless, this effect must be recognizable because of a different angular distribution. Corresponding to the formula  $d\sigma_{\rm g}/do = (1/2)\sigma_{\rm g}(kR)^2 \Phi^2$  (kRe) diffraction scattering is effective in the case of the angles  $\theta_{\rm g} \sim 1/kR$ , whereas scattering by the COULOMB field is concentrated within the domain  $\theta_{\rm g} \sim$  cm²/E. Therefore, the differential cross sections for U at  $\theta = 0.015$  are equal at E = 300 MeV. do diminishes rapidly, but  $d\sigma_{\rm g}/do$  in this domain retains the constant value of  $\sim 0.8$  millibarn ( $\theta_{\rm g} = 0.09$ ).

BERESTETSKIY V. B

USSR / PHYSICS

CARD 1 / 2

PA - 1738

SUBJEGT AUTHOR

BERESTECKIJ, V.B., KUZNECOV, E.V.

TITLE

PERIODICAL

The Diffraction Scattering of Energy-Rich Photons by Nuclei.

Žurn.eksp.i teor.fis, <u>31</u>, fasc.4, 723-7**2**3 (1956)

Issued: 1 / 1957

The properties of a nucleus with respect to energy-rich photons (at  $kR \ll 1$ , where k denotes the wave number of the photon and R - the radius of the nucleus) can be characterized by a complex refraction index: n + i R/k, where  $n \sim 1$  and  $\mathcal{H}$  R  $\ll$  1 applies. The value of the absorption coefficient  $\mathcal{H}$  can be expressed on the basis of general formulae by the experimentally known cross section  $\sigma_c$  of the photoproduction of mesons on nuclei:  $\Re R = 3\sigma_c^2/4\pi R^2$ . The existence of an absorption must lead to an elastic scattering of photons. By using the general diffraction relations for the semi-transparent nuclei it is without difficulty possible for the cross section o of elastic scattering to obtain the expression  $R_{0}^{\sigma} = 9\sigma_{0}^{2}/(32 \pi R^{2})$ . The amplitude of scattering in a small angle  $\theta$  is  $f(\theta) = ikR \int_{0}^{\infty} J_{0}(k \theta \sqrt{R^{2} - s^{2}}) s^{2} ds$  and herefrom we find for the differential cross section:  $d\sigma_{8}/do = (1/2)\sigma_{8}(kR)^{2} = \frac{1}{2}(kR \theta)$ ,  $\Phi(x) = x^{-2}(x^{-1} \sin x - \cos x)$ . In accordance with experimental data  $\sigma_{0} \sim 10^{-28}$  A cm<sup>2</sup> applies in the case of photon energies of the order 300 MeV. Here the cross section of the elastic

Zurn.eksp.i teor.fis, 31, fasc. 4,722-723 (1956) CARD 2 / 2 PA - 1898 be considered to be a straight-lined trajectory in the domains in which retardation is still essential. One finds  $T = 2T_0 - T_1$ , where  $T_0$  denotes the ionization deceleration of the electron alone, and  $T_1$  an interference term. When computing  $T_1$  it is of essential importance that the transversal difference of the components of the pair be considerably greater than the longitudinal difference. In the integral expression for  $T_1$  the limiting value for the dielectricity constant  $\ell$  of the medium at high frequencies is essential. We finally find:  $T_1 = (ce^2 \lambda^2/\pi) \int (\cos k_x s/(k_x^2 + k_y^2 + \lambda^2))$  dk  $K_x = 2e^2 c \lambda^2 K_0(s \lambda)$ . Here  $K_0$  denotes a corresponding BESSEL function and it holds that  $S_1 = (x_2 - x_1)$ . The convergence of this integral for  $T_1$  means that in the interference effect the large distances (for which macroscopic observation is permitted) are of importance. The analogous integral for  $T_1$  is known to diverge and must be limited by a certain maximum value of the transversal wave vector  $K_1$ . In the case of great  $S_1$  is  $S_2$  the interference effect vanishes. At  $S_2$  it is possible to use the representation  $S_2$  in  $S_3$  with  $S_3$  it is possible to represent  $S_3$  in  $S_4$  in

BERESTETSKIY, VB. BERESTETSKIY, V.B.

SUBJECT AUTHOR.

USSR / PHYSICS

PA - 1898

TITLE

BERESTECKIJ, V.B., GEŠKENBEJN, B.V.

PERIODICAL

On the Ionization Slowing-Down of Electron-Positron Pairs of

High Energy.

Zurm.eksp.i teor.fis,31, fasc.4,722-723 (1956) Issued: 1 / 1957

Because of the interference of electron- and positron fields, in the case of short distances from the place of the creation of the electron-positron pair, the ionization caused by this pair is less than the double ionization of an electron. This phenomenon was theoretically investigated by A.E. ČUDAKOV (Izv. Akad. Nauk SSSR, 19, 650 (1955). The present report describes a different derivation of the formula of ionization slowing-down of such a pair in order to define the limits of its applicability with precision. For this purpose the authors used LANDAU'S method for the derivation of the formula of ionization losses at high energies (within range of the polarization effect). If electron and positron are at the points  $\vec{r}_1(t)$  and  $\vec{r}_2(t)$  respectively at a given point of time t, the energy loss of the pair per time unit is  $\vec{T} = ec \begin{cases} \vec{v}_1 \vec{E} & (r_1, t) - \vec{v}_2 \vec{E} \\ \vec{v}_1 \vec{E} & \vec{v}_2 \vec{E} \end{cases}$  denote the velocities of the positron and electron respectively, and E the electric field of the pair. This field may be looked upon as a field in a macroscopic medium and can be represented in form of a FOURIER integral. The trajectories of the charges scattered in the medium can

Zurm.eksp.i teor.fis, 31, fasc. 2, 350-351 (1956) CARD 2 / 2 PA - 1448 tributions on the field strength H may serve the purpose of determining the magnetic moment of a -particle. The correlation function has the following form in the case of the presence of a magnetic field:  $I = \sum_{n=1}^{\infty} \frac{1}{2n+1} A_n \sum_{r=n}^{\infty} \frac{1}{1+i\omega\tau} \sqrt{\frac{r}{n}} \left(n_1\right) \sqrt{\frac{r}{n_2}} \left(n_2\right)$ Here  $\omega$  denotes the corresponding LARMOR-frequency,  $\tau$  - the life of the  $\Lambda$  -particle,  $\Lambda$  the coefficients of  $P_n$  in the formulae (1). If the gyromagnetic ratio of the  $\Lambda$  -particle is equal to that of the proton, then  $\omega$   $\tau$  attains the value 0,3 in the case of H 3.104 G, Above all the formula (2) assumes the following form in the case of  $p_1$  = 3/2:  $I = 1 + P_2 \left(\cos\theta_1 P_2 \left(\cos\theta_2\right) + \frac{r}{\tau^2}\right) + \frac{r}{\tau^2} \left(\frac{r}{\tau^2}\right) = \frac{r}{\tau^2} \left[\cos\left(\frac{r}{\tau}\right) - \omega\tau \sin\left(\frac{r}{\tau}\right) - \frac{r}{\tau^2}\right] / \left(1 + \omega^2\tau^2\right) + \frac{r}{\tau^2}$ Here  $\Omega$  and  $\Omega$  are the spherical angles of the vectors  $r_1$  and  $r_2$  in that

Here  $\theta_1$ ,  $\phi_1$ ,  $\theta_2$ ,  $\theta_2$  are the spherical angles of the vectors  $n_1$  and  $n_2$  in that coordinate system in which the z-axis has the direction of the magnetic field.

INSTITUTION:

BERESTETSKIY, V.B.

USSR / PHYSICS

CARD 1 / 2

PA - 1448

AUTHOR BERESTECKIJ, V.B., POMERANČUK, I.JA. TITLE

SUBJECT :

The Correlation Phenomena on the Occasion of the Capture of K-Mesons PERIODICAL Žurn.eksp.i teor.fis,31, fasc.2, 350-351 (1956)

Issued: 10 / 1956 reviewed: 10 / 1956

The capture of a K-meson by a proton with subsequent decay of the hyperon produced on this occasion, i.e. the reaction  $K^-+p \to \bigwedge^0+\pi^0 \to p+\pi^-+\pi^0$  can be used for -particle from the angular correlation of

If the spin of the K-meson is equal to zero, the initial system has the angular momentum 1/2 (if the K-meson is captured in the s-state). The following angular distribution  $I_j(\theta)$  then occurs in dependence of the spin j of the  $\Lambda$ -particle and the

angle  $\theta$  between the directions  $n_1$  and  $n_2$  of the momenta with respect to the systems  $(\pi, \pi^0)$  and  $(p, \pi^-)$  respectively (where  $I_{1/2}(\theta) = 1$ ):

$$I_{3/2}(\theta) = 1 + P_2(\cos \theta) \sim 1 + 3\cos^2 \theta$$
  
 $I_{5/2}(\theta) = 1 + (8/7)P_2(\cos \theta) + (6/7)P_4(\cos \theta) \quad 1 - 2\cos^2 \theta + 5\cos^4 \theta$  (1)  
(Compare the analogous formulae for the 1

(Compare the analogous formulae for the decay of the particle as developed by R.GATTO, Nuov.Cim.2, 841 (1955). If the spin of the K-meson is equal to 1, the initial system may have either the angular momentum 1/2 or 3/2, and therefore the formulae of the angular correlations loose their uniqueness. If the system is in an exterior magnetic field, the dependence of the angular dis-

## Zern. & Exp. i teor. fis, $\underline{30}$ , fasc. 6, 1169-1171 (1956) CARD 2 / 2 PA - 1415 J = 1/2: $I = 1 - 0.6 \cos^2 \theta + a(1 + \cos^2 \theta)$ ' J = 3/2: $I = 1 + 0.75\cos^2 \theta + a(0.4 - 1.2 \cos^2 \theta) + a^2(0.37 + 0.48 \cos^2 \theta) + b$ . J = 5/2: $I = 1 - 0.45\cos^2 \theta + \beta(0.4 - 1.2 \cos^2 \theta) + \beta^2(0.33 + 0.43 \cos^2 \theta) + \beta^2(0.53 + 0.43 \cos^2 \theta) + \beta^$

BERESTETSKIY, V.B.

USSR / PHYSICS

CARD 1 / 2

PA - 1415

SUJJECT AUTHOR

BERESTECKIJ, V.B., IGNATENKO, V.P.

TITLE

Angular Distribution in the Case of the Cascade-Like Decay

of Hyperons.

PERIODICAL

Žurn.eksp.i teor.fis,30, fasc.6, 1169-1171 (1956)

Issued: 8 / 1956 reviewed: 10 / 1956

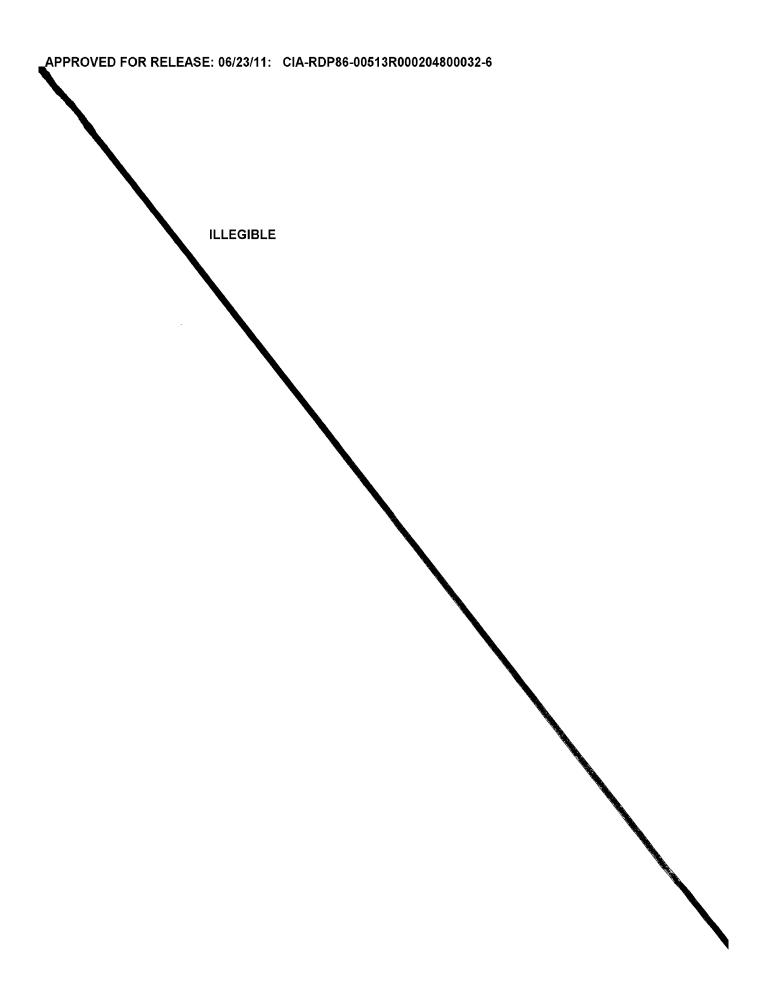
Here the cascade-like decay  $\sum_{i=0}^{n} \rightarrow \bigwedge_{i=0}^{n} p + \pi^{-} + \gamma$  is investigated. At first the wave function of the relative motion of the proton and the pion as well as the wave function of the entire system are explicitly given in the end state. With the help of the well-known addition theorem of the square of a spherical harmonic according to LEGENDRE'S polynomials and the summation properties of the coefficients of the vector separation, the angular distribution of the particles is computed.

In the following the angular distributions  $I(\theta)$  for j=3/2 and for various values of J are enumerated. With j = 1/2 the distribution is spherical symmetrical. (Several coefficients are determined by the decay mechanism and are expressed by a factor. If only the smallest L plays a role, the first two terms must be omitted in the following formulae). Denotations: j - spin of the  $\Lambda$  -particle, J - spin of the  $\Sigma$  -particle, L - angular momentum of the relative motion of photon and  $\Lambda$  -particle.

The following are the explicit expressions for the angular distributions:

## APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800032-6

## BERESTETSKIY V.B B-0 Category: USSR/Theoretical Physics - Quantum Field Theory Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 5703 Borostetskiv V.B., Krokhin, O.N., Khlabnikov, L.K. : Borostetskiv V.B., Krokhin, O.N., Khlabnikov, L.K. : Concorning the Radiation Correction to the A - Heson Hagnetic Luthor Orig Pub : Zh. oksporim. i toor. fiziki, 1956, 30, No 4, 786-789 Titlo Abstract: The deviation from the Schwinger formula is calculated for the radiation correction to the magnetic moment under the assumption that the integration with respect to the mementa must be restricted to an upper limit \(\chi\_1\), where \(\chi\_1\) \(\chi\_2\) and \(\chi\_1\) and \(\chi\_2\) and and Pomoranchuk (Reforat Zhur Fizika, 1956, 15733, 21813, 21814) concerning the inapplicability of the modern field theory to such distances. If this correction is written in the form such distances. If this correction is written in the form (2/3)mc/ of d F may turn out to be not too small. , 1/1 Card



Berestetskiy, V.B.

PARTICLE ACCELERATORS: STRONG-FOCUSING ACCELERATOR

"Admission of Particles Into the Chamber of an Accelerator with Strong Focusing," by V.B. Berestetskiy, L.L. Gol'din, and D.G. Koshkarev, Pribory i Tekhnika Eksperimenta, No 3, November-December 1956, pp 26-31.

Discussion of the injection of particles in an accelerator with strong focusing. The problem of the scattering of particles by the residual gas is solved. The effect of space charge on the frequency of the betatron oscillations is considered. The construction of a system for injection of particles into an accelerator chamber is described in brief. Reference is made to work by Blachman and Courant (Physical Review, 1948 74, 140) and Greenberg and Berlin (Review of Scientific Instruments, 1951, 22, 293), and by Barden (Physical Review, 1954, 93, 1378).

Card 1/1

OSR/Nuclear Physics - Mu-meson pair production

FD-3258

Card 1/1

Pub. 146 - 17/44

Author

: Berestetskiy, V. B.; Pomeranchuk, I. Ya.

Title

: Letter to the editor. Production of mu-meson pair during annihila-

: Zhur. eksp. i teor. fiz., 29, No 6(12), Dec 1955, 864

Periodical Abstract

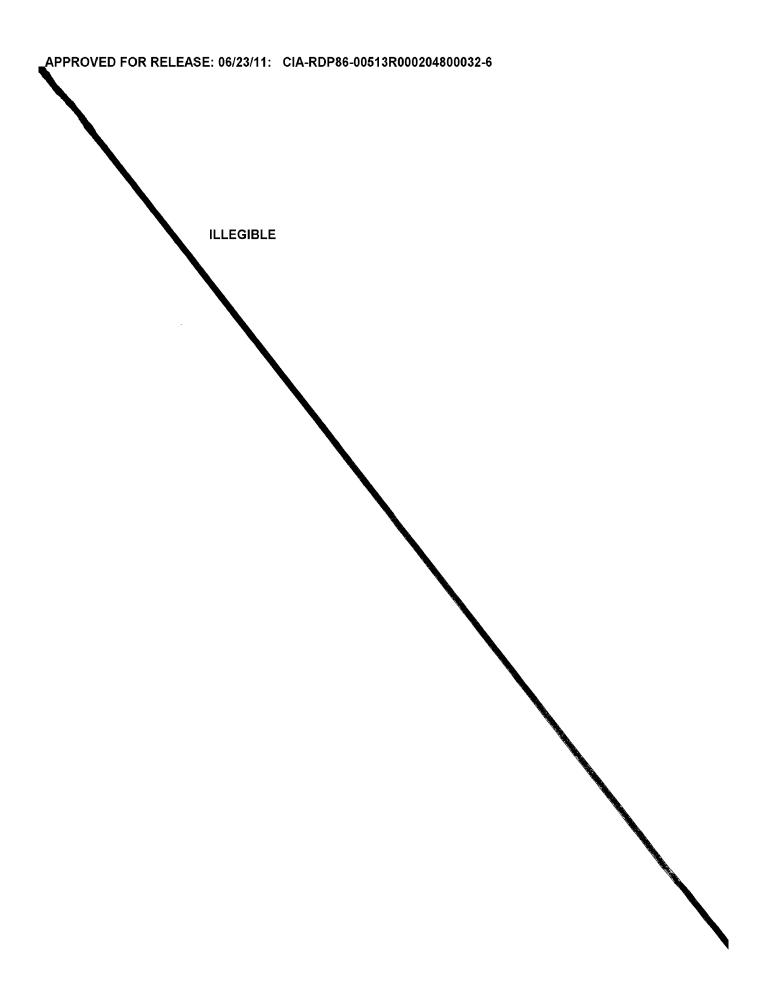
: According to the authors, if mu-mesons do not have peculiar to them any specific interaction more essential than electromagnetic interaction, then experimental investigation of electrodynamic processes with the participation of mu-mesons can give important information concerning the limits of applicability of the modern field theory and concerning the character of physical laws close to this limit, since the Compton wavelength of the mu-meson is comparable with those dimensions close to which one can expect radical changes in space-time concepts (I. Ya. Pomeranchuk, DAN SSSR, 103, 1005; 104, 51, 1955). They claim that deviation of experimental data from the formula for the effective cross-section of mu-meson pair production in the collision of positron with electron at rest should give information on maximum cross-section, minimum energy  $\boldsymbol{E}_n$  of such pair production, etc.

Institution

: Academy of Sciences USSR

Submitted

September 29, 1955



BERESTETSKIY V.B

Category: USSR/Theoretical Physics - Quantum Electrodynamics

B-3

Abs Jour : Rof Zhur - Fizika, No 3, 1957, No 567d

author Title

: David to taking W. Bosses.
: Dovolopment of Quantum Electrodynamics

Orig Pub : Vestm, AN SSSR, 1955, No 10, 22-31

Absoract : Popular article, describing the p resent-day status of quantum olectrodynamics. A historical survey of the problem of the oloctromagnetic mass of the electron is given, A clear explanation is given for the idea of the renormalization of charge and mass on the basis of an examination of which regions of space (or wavelengths) contribute to the self energy and polarization of vacuum.

Card : 1/1 BERESTETSKIY V. B

USER/Scientific Organisation - Theoretical physics

Card 1/1 Pub. 124 - 19/32

Authors : Berestetskiy, V. B., Dr. of Phys-Math Sc.

Titls : Development of quantum electrodynamics and the theory of elementary particles

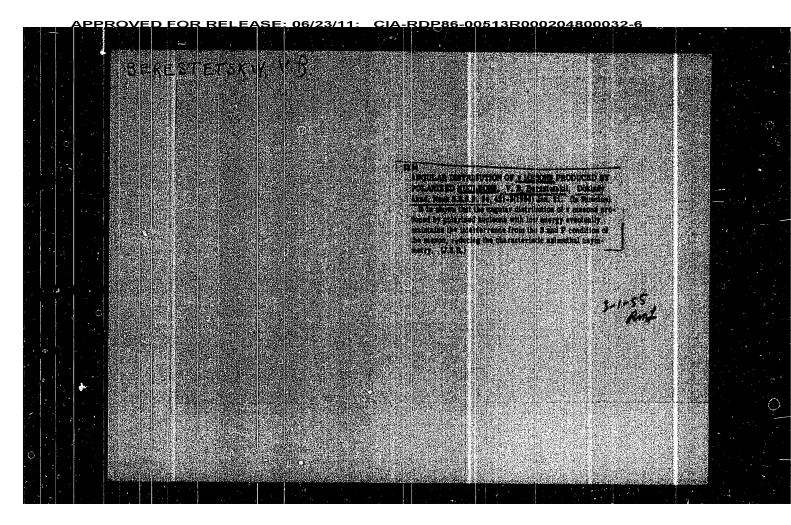
Periodical : Vest. AM USER 25/6, 90-93, June 1955

Abstract : Briefs are presented from the All-Union scientific conference held at the Ausdamy of Sciences, USER in Moscow (March 31 - April 7, 1955) and devoted to problems of quantum electrodynamics, theory of elementary particles and related fields of theoretical physics. Names of foreign conference are listed.

Institution:

Submitted : .....

Submitted : .....



BRIDSTETSKIT, V. B.

USSR/hysics - Quantum electrodynamics

Card 1/1 : Pub. 118 - 7/9

Authors : Abrikosov, A. A.; Pomeranchuk, I. Ya.; and Shmushkevich, I. M.

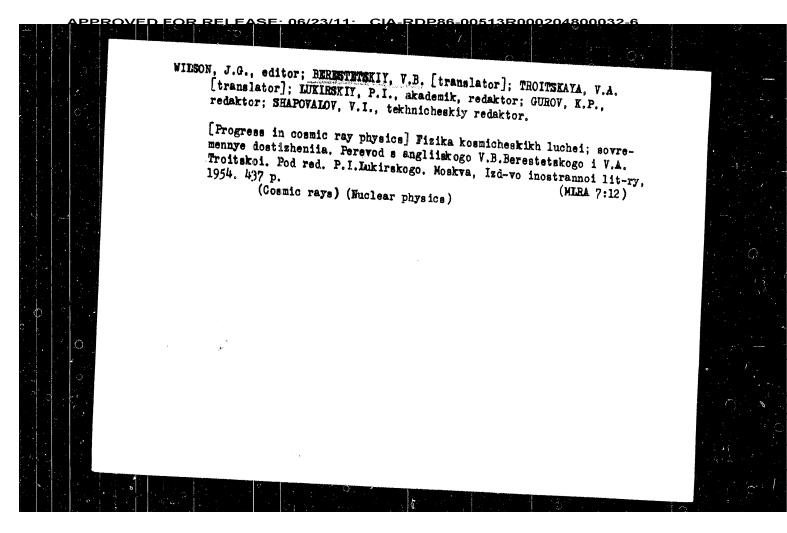
Title : "Quantum Electrodynamics" by A. I. Akhizer and V. B. Berestetskiy. Goslzdat, 1953, 428 p.

Periodical : Usp. fim. nauk 53/3, 442-4444, July 1954

Abstract : A monographical work by two Soviet scientists is reviewed. The monograph deals with quantum electrodynamics and is considered to be a unique and very valuable work on theoretical physics.

Institution : ...

Submitted : ...



APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800032-6

BERESTETSKII, v. s.

UBSR/Nuclear Physics - Mesons, Tau

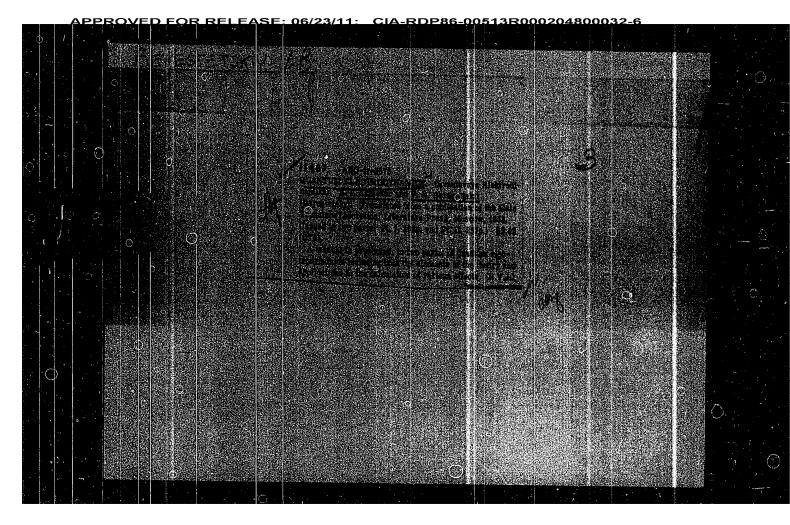
21 Sep 53

"Decay Into 3 pi-Mesons and the Hypothesis of Isotopic Invariance," V.B. Berestetskiy

DAN SSSR, Vol 92, No 3, pp 519-521

Analyzes previous works (Harding; Phil Mag 41 1950); Fowler et al, ibid 42 (1951); Hodson, ibid 42 (1951)) on known decay scheme of tau-meson into 2 positive and one negative pi-mesons and attempts to prove possibility of a tau-meson decay into 2 neutral and one positive meson. Indebted to Prof I.M. Gelfand and to Acad L.D. Landau, who also presented the article, 22 Jul 53.

268T86



BERESTETSKIY, V. B. order, and 2d approximations. Cites Ya. A. Smorodinskiy (151d. 39, 325, 1949; G. A. Zisman, "Zhur Eksper i Teoret Fiz" 10, 1940 and 11, 1941. Also Gupta; Feynman; Heitler; and symposium of non-Sowiet articles translated into Russian. refers to non-Soviet sources: 2d order processes, examples, processes of higher lision matrices, general perturbation theory, energy of interaction, field of photons and electrons, lst-MSSR/Physics order processes, function of interaction of 2 charges dynamics; does not, however, introduce any exposition of methods of regularization. Discusses coltheory of perturbations in modern quantum electro-Expounds the fundamentals and methods governing the W. B. Berestetskiy "Uspekh Fiz Nauk" "Theory of Perturbations in Quantum Electrodynamics, WSR/Physics - Quantum Electro-Quantum Electrodynamics, Perturbation (Contd) dynamics, Perturbation Vol XIVI, No 2, pp 231-278 Schwinger; Dyson; Cites Ya. A. Smorod-TOTIOTS TOTATOT Feb 52 Feb 52